THERMOLEC

ELECTRIC PLENUM HEATER

The Latest In Technology for

DUAL-ENERGY HEATING

An Easy Conversion to Clean, Convenient and Affordable Electric Heat

Model TU Electric Heaters Offer

Lower air flow requirements
- 40 CFM per kW

Easy to baffle for various size plenums
- Baffles are included with heater

Automatic switching to fossil fuel backup
- Dual fuel control included

Built in circuit breaker for easy isolation
- Ensure additional safety for service contractor

Center coil baffle included
- Allows for easy installation over "A" coil

Modulating units available
- Ideal for heat pumps

Thermolec Plenum Heater Features

Center coil baffle
- Easy installation over A coil

High-grade nickel-chrome open coil elements
- Only 40 cfm per kW minimum air flow

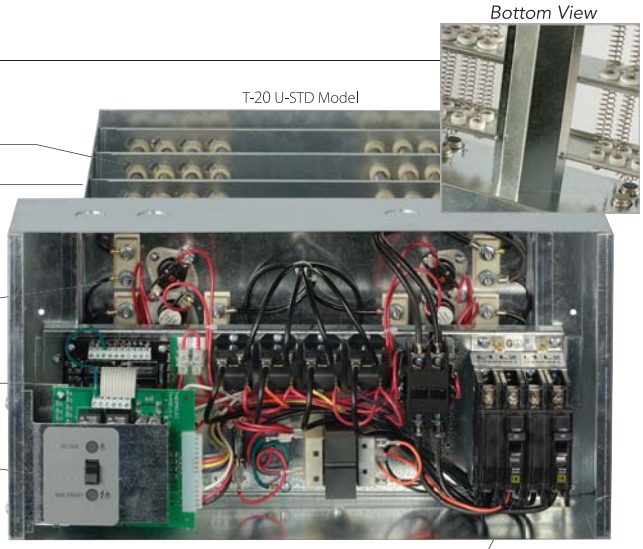
Includes baffles that attach to coil frame
- Easier to baffle for larger plenums

Automatic and manual high-limit protection
- Prevents unit from overheating

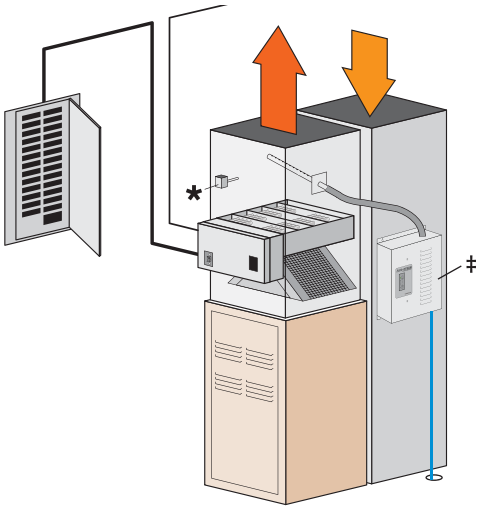
Isolation and operating relays
- A/C-ready, built-in interface control module

Built-in dual fuel control
- Automatically switches to fossil fuel back-up with utility load control or can be switched manually

Circuit breakers included
- Provides safe electrical isolation for maintenance



Typical Installation



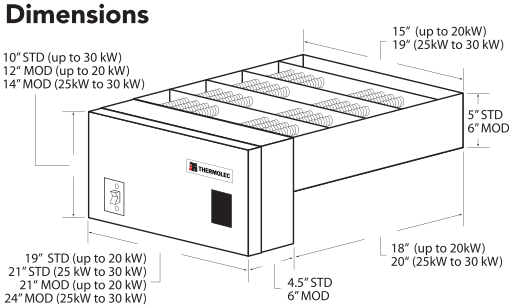
Applications

Standard Plenum Heater:
Fossil fuel furnace with or without A/C

Modulating Plenum Heater:
Fossil fuel furnace with heat pump or zoned system

For homes with 100 amp service panels, ask about our Retro models

Dimensions


10" STD (up to 30 kW)
12" MOD (up to 20 kW)
14" MOD (25kW to 30 kW)
15" (up to 20kW)
19" (25kW to 30 kW)
5" STD
6" MOD
19" STD (up to 20 kW)
21" STD (25 kW to 30 kW)
21" MOD (up to 20 kW)
24" MOD (25kW to 30 kW)
4.5" STD
6" MOD
18" (up to 20kW)
20" (25kW to 30 kW)

Modulating Plenum Heater - Additional Features

*** Plenum-mounted sensor and adjustable temperature setting on board**
- Full modulation of elements to maintain plenum temperature – saves energy

All elements switched with solid state electronic relays
- Silent operation and long life

Built-in multi-purpose control module
- No additional interface or fossil fuel kit required

C SA® US

MODELS STANDARD	MODELS MODULATING	kW @ 240V	BTU OUTPUT	HEATING SEQUENCES	TOTAL AMPERAGE	BREAKER (A) STD	BREAKER (A) MOD
T-5 U-STD	T-5 U-MOD	5	17,060	1	20.8	30	30
T-10 U-STD	T-10 U-MOD	10	34,120	2	41.6	60	60
T-15 U-STD	T-15 U-MOD	15	51,180	4 STD / 3 MOD	62.5	2 x 40	1 x 60 1 x 30
T-18 U-STD	T-18 U-MOD	18	61,416	4	75.0	2 x 50	2 x 50
T-20 U-STD	T-20 U-MOD	20	68,240	4	83.3	2 x 60	2 x 60
T-25 U-STD**	T-25 U-MOD**	25	85,300	4 STD / 5 MOD	104.0	3 x 50	2 x 60 1 x 30
T-30 U-STD**	T-30 U-MOD**	30	102,360	4 STD / 5 MOD	124.0	3 x 60	2 x 60 1 x 40

** Larger frame size required for 25/30 kW

‡ *For optimum comfort, THERMOLEC recommends Acu-Steam Humidifiers.*

Distributed By:

THERMOLEC

2060 Lucien-Thimens
Montreal, Quebec, Canada
H4R 1L1
Tel.: 514-336-9130 Fax.: 514-336-3270
Web Site: **www.thermolec.com**

July 2008

THERMOLEC
Retro Plenum Heater

Easy, low cost retrofit of gas to electric dual-fuel heat

Current Sensor included

- *34,000 btu heating capacity*
- *Uses low electric heat rate for majority of heating season*
- *Can be added to most existing 100 amp services*
- *Low (400 cfm) minimum airflow requirement*
- *Easy installation for various sized plenums*

Unique features include:

- *Designed for both single and variable speed blowers*
- *Current Sensor or utility load control compatible*
- *Automatically switches to fossil fuel back-up when electric cannot satisfy heat call due to ambient temperature conditions*

Thermolec Plenum Heater Features

Center coil baffle
- Easy installation over A coil

High-grade nickel-chrome open coil elements
- Only 40 cfm per kW minimum air flow

Includes baffles that attach to coil frame
- Easier to baffle for larger plenums

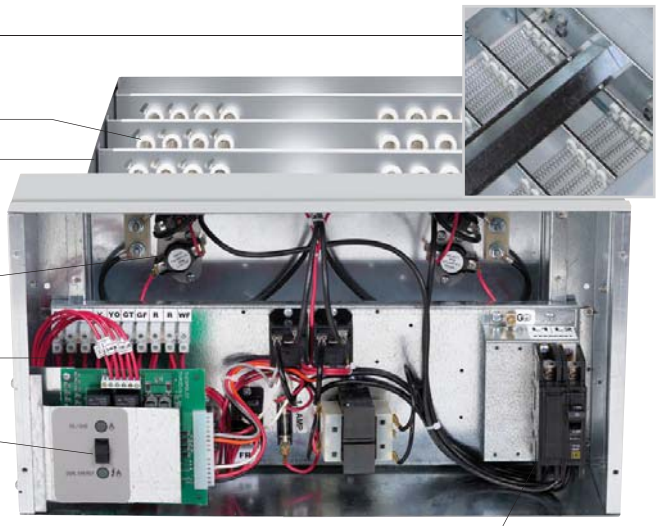
Automatic and manual high-limit protection
- Prevents unit from overheating

Isolation and operating relays
- A/C-ready, built-in interface control module

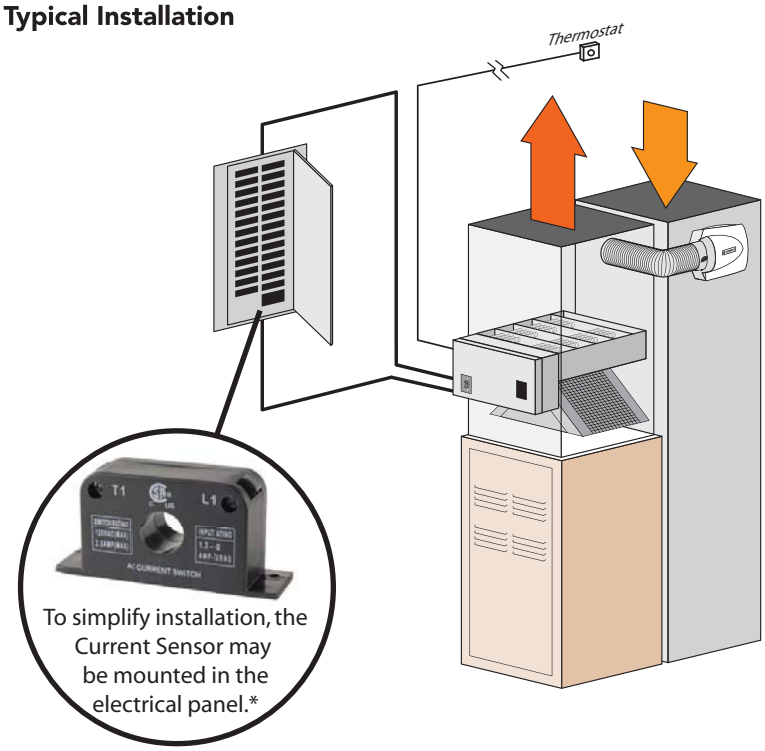
Built-in dual fuel control
- Automatically switches to fossil fuel back-up with utility load control or can be switched manually

Circuit breakers included
- Provides safe electrical isolation for maintenance

Bottom View



Typical Installation

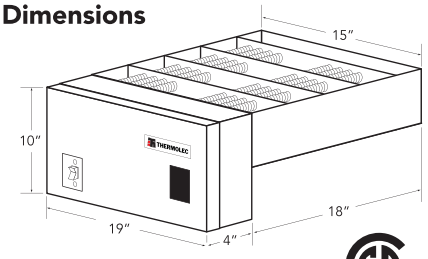


Applications

Easy and cost effective way to add electric heat to fossil fuel furnaces with or without A/C.

Can be safely installed with most 100 amp service entrances* thanks to a Current Sensor which monitors the use of a large electrical appliance such as a water heater or dryer. If the appliance is in use the plenum heater is automatically put into standby mode and will wait as long as the appliance is in use. If heat is required and the plenum heater is in standby or if it cannot satisfy the heating demand, it will automatically switch to the fossil fuel furnace for auxiliary heat.

Dimensions



MODELS	kW @ 240v	HEATING SEQUENCES	CURRENT (AMPS) PLENUM HEATER	CURRENT (AMPS) BREAKER
T-10 U-DFCT	10	2	41.6	60

* Check with local codes before installing.

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THERMOLEC LTD.

Electric Plenum Heater

Standard Staged Model: Application is fossil fuel furnace, dual fuel, with or without A/C system

Modulating Model: Application is fossil fuel furnace, dual fuel, with heat pump or multiple zones. Unit includes solid state relays, plenum temperature sensor and adjustable setting on board to control plenum supply air temperature.

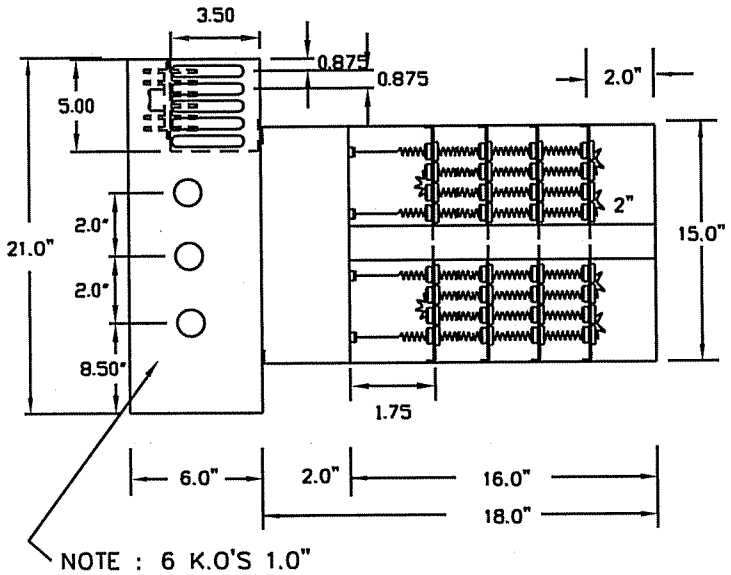
Retro Model: Application is fossil fuel furnace, dual fuel, with or without A/C system and 100 amp electrical service. Unit includes current sensing relay that controls electric heat when next largest electric appliance comes on. The retro is only available in 10kW.

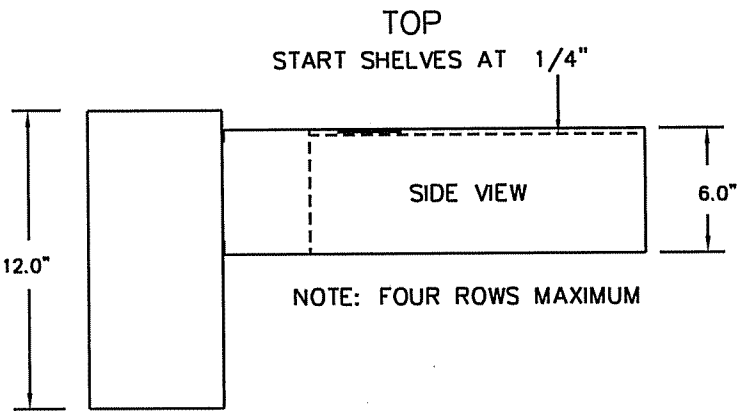
All models include the following features:

1. **Available from 5 - 30 kW:** Covers variety of heating requirements, custom units available
2. **High grade nickel-chrome open-coil elements:** 40 cfm per KW minimum airflow requirement, longer element life and no buzzers
3. **All units include Center Coil and baffles for larger plenums that attach to heater frame:** Easy installation over A-coil as well as side baffling during installation
4. **Standard in up flow, down flow - Horizontal configuration available:** Units available for all types of installations
5. **Automatic and manual-reset cut-outs:** protects against overheating
6. **Circuit breakers:** provides safe isolation of elements
7. **Built-in dual fuel control:** allows unit to be set in dual fuel or fossil fuel mode, accepts "load shedding" signal from utility company and switches to fossil fuel back-up automatically
8. **Isolation relays:** AC ready, no need for adding relays
9. **One size frame for 5 - 20 kW:** Fits both 15" and 18" plenums, reduces inventory
10. **One size frame for 25 & 30 kW:** 19" frame for both sizes, fits larger plenums
11. **240/1 standard, three phase and custom sizes available**

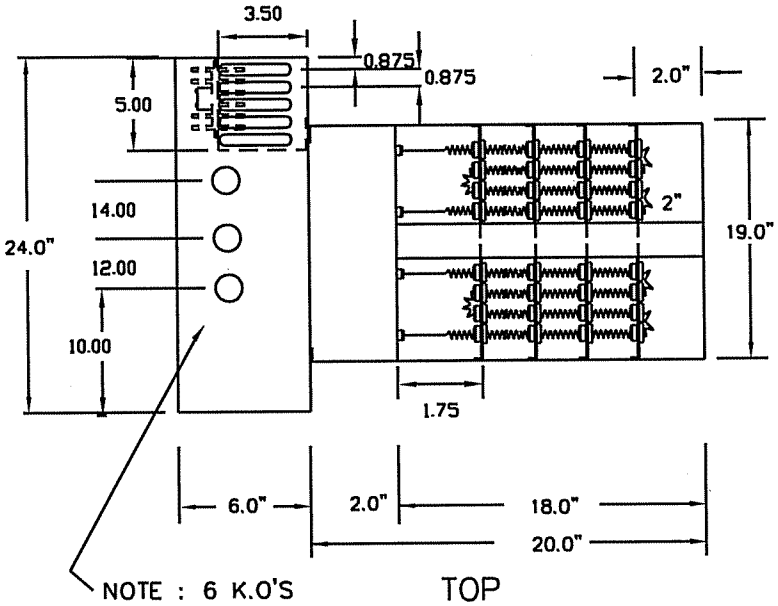
Contact your Thermolec Sales Representative for Custom Unit Quotes

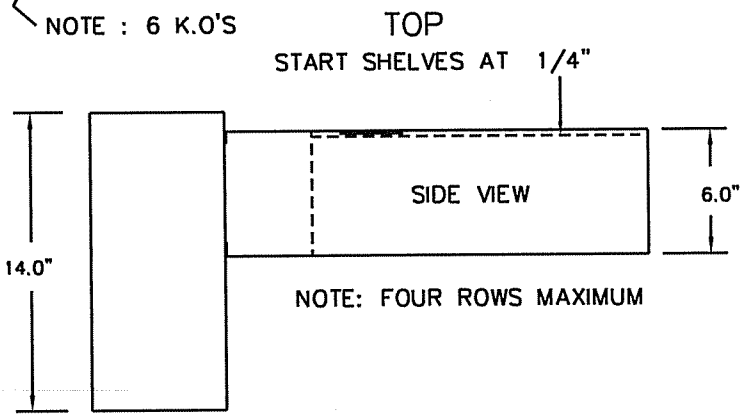
MODULATING PLENUM HEATER
T10U-MOD TO T20U- MOD



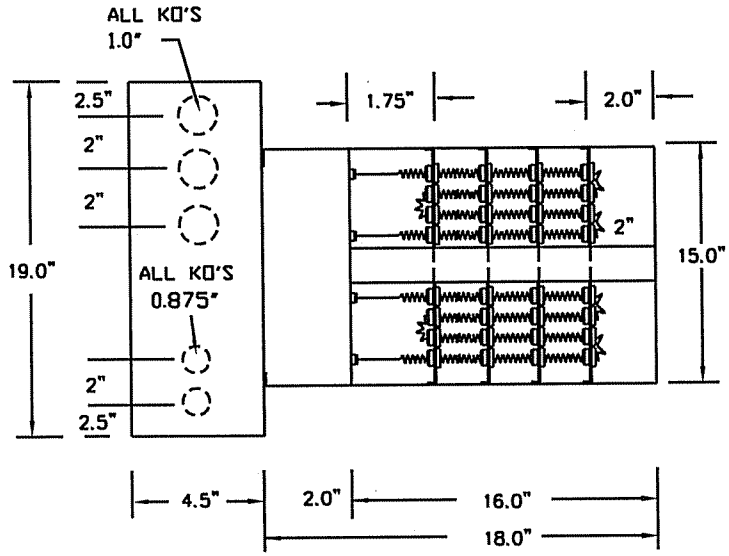


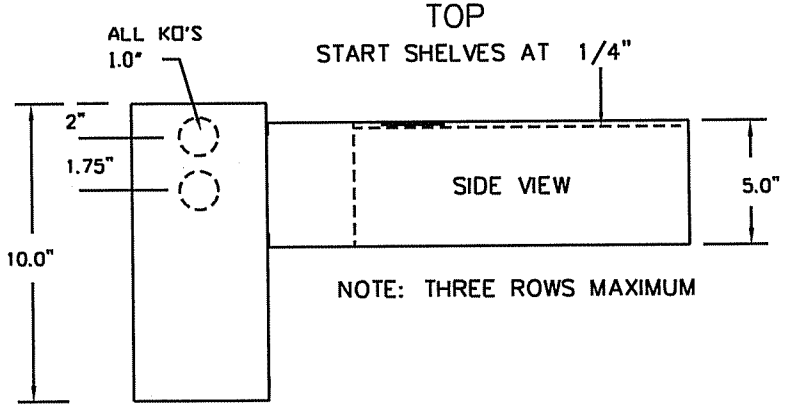
MODULATING PLENUM HEATER
T25U-MOD TO T30U- MOD



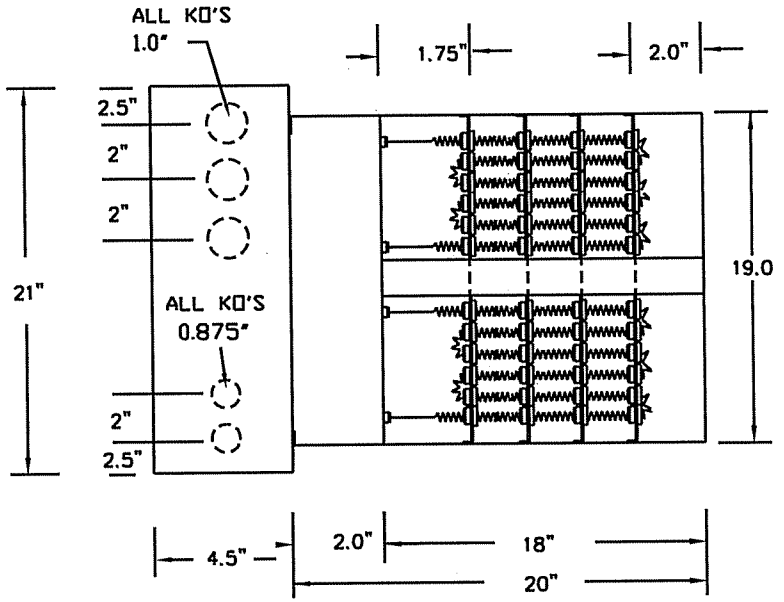


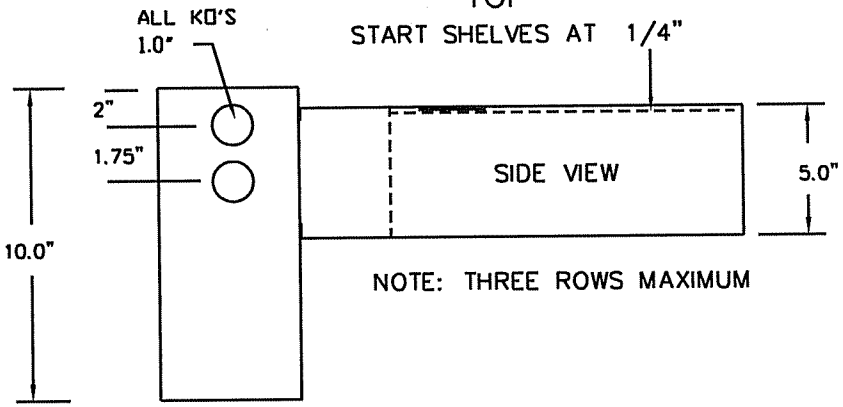
STANDARD PLENUM HEATER
T5U TO T20U





STANDARD PLENUM HEATER
T25U TO T30U





Cost Per Million Btu

Electricity **3412 BTU / kWh**

System Efficiency (C.O.P. or EF)	$ / kWh	0.038	0.040	0.042	0.044	0.046	0.048	0.050	0.052	0.054	0.056	0.058	0.060	0.062	0.064	0.066	0.068	0.070	0.072	0.074	0.076	0.078	0.080	0.090	0.100
	100%	11.14	11.72	12.31	12.90	13.48	14.07	14.65	15.24	15.83	16.41	17.00	17.58	18.17	18.76	19.34	19.93	20.52	21.10	21.69	22.27	22.86	23.45	26.38	29.31
	150%	7.42	7.82	8.21	8.60	8.99	9.38	9.77	10.16	10.55	10.94	11.33	11.72	12.11	12.50	12.90	13.29	13.68	14.07	14.46	14.85	15.24	15.63	17.58	19.54
	200%	5.57	5.86	6.15	6.45	6.74	7.03	7.33	7.62	7.91	8.21	8.50	8.79	9.09	9.38	9.67	9.96	10.26	10.55	10.84	11.14	11.43	11.72	13.19	14.65
	250%	4.45	4.69	4.92	5.16	5.39	5.63	5.86	6.10	6.33	6.57	6.80	7.03	7.27	7.50	7.74	7.97	8.21	8.44	8.68	8.91	9.14	9.38	10.55	11.72
	275%	4.05	4.26	4.48	4.69	4.90	5.12	5.33	5.54	5.76	5.97	6.18	6.39	6.61	6.82	7.03	7.25	7.46	7.67	7.89	8.10	8.31	8.53	9.59	10.66
	300%	3.71	3.91	4.10	4.30	4.49	4.69	4.88	5.08	5.28	5.47	5.67	5.86	6.06	6.25	6.45	6.64	6.84	7.03	7.23	7.42	7.62	7.82	8.79	9.77
	325%	3.43	3.61	3.79	3.97	4.15	4.33	4.51	4.69	4.87	5.05	5.23	5.41	5.59	5.77	5.95	6.13	6.31	6.49	6.67	6.85	7.03	7.21	8.12	9.02
	350%	3.18	3.35	3.52	3.68	3.85	4.02	4.19	4.35	4.52	4.69	4.86	5.02	5.19	5.36	5.53	5.69	5.86	6.03	6.20	6.36	6.53	6.70	7.54	8.37
	400%	2.78	2.93	3.08	3.22	3.37	3.52	3.66	3.81	3.96	4.10	4.25	4.40	4.54	4.69	4.84	4.98	5.13	5.28	5.42	5.57	5.72	5.86	6.59	7.33

Natural Gas **100,000 BTU / therm**

System Effciency	$ / ccf	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05
	75%	12.00	12.67	13.33	14.00	14.67	15.33	16.00	16.67	17.33	18.00	18.67	19.33	20.00	20.67	21.33	22.00	22.67	23.33	24.00	24.67	25.33	26.00	26.67	27.33
	80%	11.25	11.88	12.50	13.13	13.75	14.38	15.00	15.63	16.25	16.88	17.50	18.13	18.75	19.38	20.00	20.63	21.25	21.88	22.50	23.13	23.75	24.38	25.00	25.63
	82%	10.98	11.59	12.20	12.80	13.41	14.02	14.63	15.24	15.85	16.46	17.07	17.68	18.29	18.90	19.51	20.12	20.73	21.34	21.95	22.56	23.17	23.78	24.39	25.00
	85%	10.59	11.18	11.76	12.35	12.94	13.53	14.12	14.71	15.29	15.88	16.47	17.06	17.65	18.24	18.82	19.41	20.00	20.59	21.18	21.76	22.35	22.94	23.53	24.12
	90%	10.00	10.56	11.11	11.67	12.22	12.78	13.33	13.89	14.44	15.00	15.56	16.11	16.67	17.22	17.78	18.33	18.89	19.44	20.00	20.56	21.11	21.67	22.22	22.78
	92%	9.78	10.33	10.87	11.41	11.96	12.50	13.04	13.59	14.13	14.67	15.22	15.76	16.30	16.85	17.39	17.93	18.48	19.02	19.57	20.11	20.65	21.20	21.74	22.28
	95%	9.47	10.00	10.53	11.05	11.58	12.11	12.63	13.16	13.68	14.21	14.74	15.26	15.79	16.32	16.84	17.37	17.89	18.42	18.95	19.47	20.00	20.53	21.05	21.58

Propane **95,500 BTU / gallon**

System Effciency	$ / gal	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	2.95	3.00	3.05	3.10
	75%	13.96	15.36	16.75	18.15	19.55	20.94	22.34	23.73	25.13	26.53	27.92	29.32	30.72	32.11	33.51	34.90	36.30	37.70	39.09	40.49	41.19	41.88	42.58	43.28
	80%	13.09	14.40	15.71	17.02	18.32	19.63	20.94	22.25	23.56	24.87	26.18	27.49	28.80	30.10	31.41	32.72	34.03	35.34	36.65	37.96	38.61	39.27	39.92	40.58
	82%	12.77	14.05	15.32	16.60	17.88	19.15	20.43	21.71	22.99	24.26	25.54	26.82	28.09	29.37	30.65	31.92	33.20	34.48	35.76	37.03	37.67	38.31	38.95	39.59
	85%	12.32	13.55	14.78	16.01	17.25	18.48	19.71	20.94	22.17	23.41	24.64	25.87	27.10	28.33	29.57	30.80	32.03	33.26	34.49	35.73	36.34	36.96	37.57	38.19
	90%	11.63	12.80	13.96	15.13	16.29	17.45	18.62	19.78	20.94	22.11	23.27	24.43	25.60	26.76	27.92	29.09	30.25	31.41	32.58	33.74	34.32	34.90	35.49	36.07
	92%	11.38	12.52	13.66	14.80	15.93	17.07	18.21	19.35	20.49	21.63	22.76	23.90	25.04	26.18	27.32	28.45	29.59	30.73	31.87	33.01	33.58	34.15	34.71	35.28
	95%	11.02	12.12	13.23	14.33	15.43	16.53	17.64	18.74	19.84	20.94	22.04	23.15	24.25	25.35	26.45	27.56	28.66	29.76	30.86	31.96	32.52	33.07	33.62	34.17

Fuel Oil **138,900 BTU / galllon**

System Effciency	$ / gal	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.55	3.60	3.65	3.70	3.80	3.90	4.00	4.10	4.20	4.30	4.40	4.50	4.60	4.70	4.80	4.90	5.00
	75%	30.72	31.20	31.68	32.16	32.64	33.12	33.60	34.08	34.56	35.04	35.52	36.48	37.44	38.40	39.36	40.32	41.28	42.24	43.20	44.16	45.12	46.08	47.04	48.00
	80%	28.80	29.25	29.70	30.15	30.60	31.05	31.50	31.95	32.40	32.85	33.30	34.20	35.10	36.00	36.90	37.80	38.70	39.60	40.50	41.40	42.30	43.20	44.10	45.00
	82%	28.10	28.53	28.97	29.41	29.85	30.29	30.73	31.17	31.61	32.05	32.49	33.36	34.24	35.12	36.00	36.88	37.75	38.63	39.51	40.39	41.26	42.14	43.02	43.90
	85%	27.10	27.53	27.95	28.37	28.80	29.22	29.64	30.07	30.49	30.92	31.34	32.19	33.03	33.88	34.73	35.57	36.42	37.27	38.11	38.96	39.81	40.66	41.50	42.35
	90%	25.60	26.00	26.40	26.80	27.20	27.60	28.00	28.40	28.80	29.20	29.60	30.40	31.20	32.00	32.80	33.60	34.40	35.20	36.00	36.80	37.60	38.40	39.20	40.00
	92%	25.04	25.43	25.82	26.22	26.61	27.00	27.39	27.78	28.17	28.56	28.95	29.74	30.52	31.30	32.08	32.87	33.65	34.43	35.21	36.00	36.78	37.56	38.34	39.13
	95%	24.25	24.63	25.01	25.39	25.77	26.15	26.52	26.90	27.28	27.66	28.04	28.80	29.56	30.31	31.07	31.83	32.59	33.34	34.10	34.86	35.62	36.38	37.13	37.89

Energy Efficiency Terms

5/18/2008

Annual Fuel Utilitization Efficiency (AFUE) - The measure of annual efficiency of a residential heating furnace or boiler. Accounts for operation energy losses of the heating unit

Co-efficient of Performance (C.O.P.) - The same as the efficiency stated as a ratio of work or useful energy output of a system vs. the amount of energy inputted into the system.

Energy Factor (EF) - The efficiency or measure of overall efficiency of a variety of appliances.Water heater efficiencies are rated by EF.

THERMOLEC

Installation instructions for Plenum-mounted add-on electric heaters

MODEL TU

AUGUST 2004
VERSION 6

THERMOLEC PLENUM HEATER MODEL TU

BEFORE YOU START - GENERAL SAFETY AND INSTALLATION PRECAUTIONS

Please read and understand these instructions fully before you begin this installation and save them for future reference. The manufacturer will assume no responsibility and the warranty will be void if the user does not adhere to the following precautions.

1 - LIMITED WARRANTY

1.1 **THERMOLEC LTD.**, warrants the elements of its plenum heaters against all defects in material and workmanship for ten (10) years, and all other components for two (2) years after date of shipment from its factory.

1.2 **THERMOLEC LTD.**, will repair or replace, in their factory or on site, at their sole discretion, the plenum or any part thereof, which, in their opinion, is defective. Any misuse of this heater or any repair done by people other than authorized Thermolec personnel, without Thermolec's written consent, will void this warranty.

1.3 **THERMOLEC LTD.**, will not be held responsible for any accidental or consequential damage or delay, nor will Thermolec be held responsible for damages caused by the replacement of the plenum heater.

This limited warranty is granted by
Thermolec LTD., 2060 Lucien-Thimens Street, Montreal, Canada, H4R 1L1.

2 - INSTALLATION PRECAUTIONS AND SAFETY WARNINGS

2.1 This unit is designed to be used **only in a up-flow or down-flow installations** and it should be installed **only on oil or gas furnaces**. (No wood or solid fuel). For other applications, please contact the factory. **Custom units** are available for **horizontal installations.**

2.2 This unit is **not** designed to be installed side by side.

2.3 This unit must be installed by a qualified installer and Thermolec will not be held responsible for the quality of the installation.

2.4 Always check that you are not about to cut or drill into any air conditioning or electrical accessory during installation.

2.5 The installation and wiring must comply with national and local electrical, plumbing and building codes.

2.6 Electrical wiring must not come into contact with sharp edges or hot surfaces.

2.7 Please use common sense and normal safety precautions during the installation.

2.8 Please beware of sharp edges when you cut into a metal duct.

2.9 Always shut the power off before working on such installation. An electric shock could cause serious injury.

3 - DISCLAIMER

This warranty only applies if the unit is properly installed and operated according to the manufacturer's instructions provided with this product.

This limited warranty **does not** cover normal maintenance :

- replacement of fuses or breakers, filters, refrigerant, etc.,
- transportation and installation charges for the replacement part or component,
- any other service call or repair labor.

Replacement of a part or component under this limited warranty does not extend the warranty term or period.

This limited warranty does not apply to any part or component that is damaged in transit or handling; has been subject to abuse, neglect or accident; has not been installed, operated and serviced according to Thermolec's instruction booklet; has been operated beyond factory rated capacity; altered in any such way that its performance is affected. There is no warranty due to neglect, alteration, or ordinary wear and tear. Thermolec's liability is limited to replacement of defective parts or components and does not include payment of the cost of shipping charges and/or labor charges to remove or replace such defective components or parts.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the limitation of exclusion in the warranty may not apply to you.

We do not warranty this product suitable for the specific installation or application. It is the owner's (or installer's) responsibility for proper application.
There are no other express warranties. Specification sheets and descriptions of this product are only to identify it, and are not a warranty claim that the unit fits the description.
Thermolec is not bound by representatives, installers, warranties, or promises made by others beyond the terms of this express warranty. In no event shall Thermolec be responsible for any installation incidental or consequential damages.

Thermolec reserves the right to make changes in the design and material of its products without incurring any obligation to incorporate such changes in the units completed on the effective date of such changes.

THESE INSTALLATION INSTRUCTIONS COVER:

MODEL
TU

T-5 U to T-30 U
T-5 U-DFC to T-30 U-DFC
(5 Kw to 30 Kw)

GENERAL NOTES

- The installation of this unit should be in accordance with the regulations of the authorities having jurisdiction.

CAUTIONS

1. Before installation, ensure that the local electrical inspection authority will accept connection of this equipment to the existing panel.

2. This equipment may only be installed and tested by qualified personnel.

3. The electrical power supply should be checked for adequacy for the proposed additional load.

4. Ensure that the heat output capacity of the installed electrical Add-on Heaters does not exceed the rated output capacity of the furnace burner.

5. This heater is for use with an in-line (hi-boy) or up-flow (lo-boy) oil or gas fired furnace.

OPERATING INSTRUCTIONS

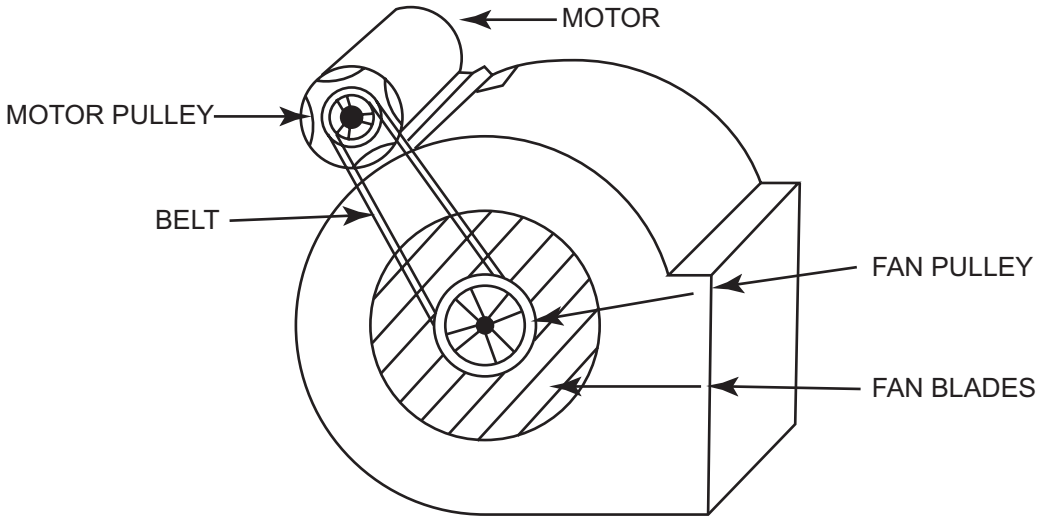
The controls provided with this unit prevent simultaneous operation of the add-on heater and the fossil fuel burner. In the case of malfunction, shut down the equipment and call a qualified electrician.

FIELD TESTS:

A. *Before* Installation of the Add-on Heater:

1. Ensure that the burner does not cycle due to repeated operation of the furnace's high limit control.
2. Determine whether stabilized outlet air temperature during burner operation is below 150°F (66°C) in the main outlet duct. If it does exceed 150°F (66°C) make the following adjustments to the Ventilation System in progressive steps:

Note: In most cases, only steps a) & b) will be necessary.



a) Check if filters are clogged;
b) Check if fan blades are clean. If not, remove the blower from its compartment and clean with a brush;
c) Adjust the motor pulley to increase its diameter;
d) Change the fan pulley for a smaller size;
e) Change the motor pulley for a larger size;
f) Change the motor and make sure that the fan control and wiring are adequate.

Note: If steps c), d) & e) are necessary, make sure that the existing motor is adequate: The current drawn must not exceed the nameplate specifications.

Important: The blower ***must not*** be changed. If the system cannot provide sufficient airflow after changing the motor, do not install the add-on heater in that furnace.

B. *After* Installation of the Add-on Heater:

1. Ensure that the burner does not cycle due to repeating operation of the furnace's high limit control.
2. Ensure that stabilized outlet air temperature during burner operation does not exceed 160°F (72°C) in the main outlet duct.
3. Run burner to ensure that the blower starts soon enough to prevent the manually resettable temperature limiting control on the Add-on Heater from tripping.
4. Operate the Add-on Heater to ensure satisfactory operation without overheating.

Note: Where a cooling coil is present, additional checks should be made to ensure adequate airflow exists for cooling system operation.

MECHANICAL SECTION

A. Product Inspection

1) Inspect the carton and heater and report any damage at once.

NEVER INSTALL A DAMAGED HEATER

2) Content of carton:
   One plenum heater and baffles. Modulating models include a plenum temperature sensor.
3) File claim with shipping company if shipment is damaged.

B. Installation Instructions:

«Cautions» - The installation, location, position and orientation of the add-on heater must conform with the following:

1) This heater must be installed downstream of the furnace in the warm air plenum.
2) This heater must be installed downstream of the furnace safety limit control.
3) No deformation, removal or displacement of any part of the furnace is permitted.
4) The position of the add-on heater must be as indicated on the front of the heater control box (Please see Fig. 1).
5) The heater axis must be in line with the plenum axis.
6) Do not install heater from top or bottom of duct. (Please see Fig. 2).
7) Always check that you are not about to cut or drill into any air conditioning or electrical accesory during installation.

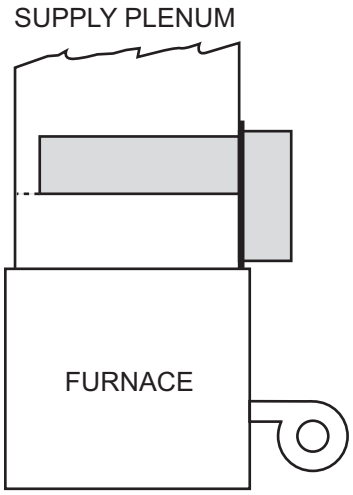


FIG. 1

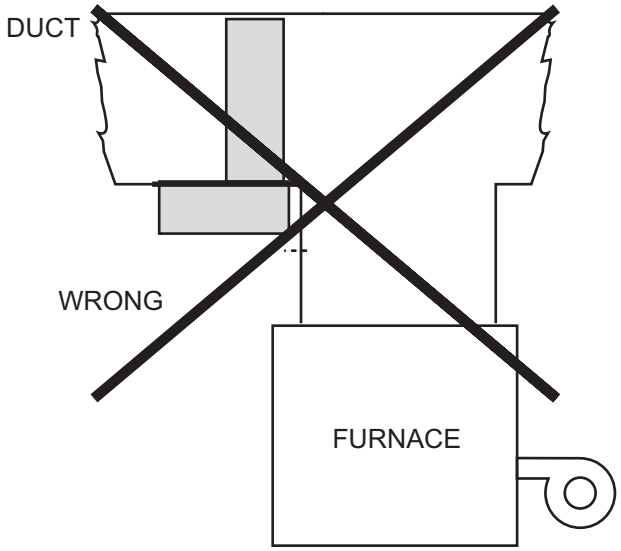


FIG. 2

STANDARD INSTALLATION CLEARANCE

The heater must be installed in the warm air plenum. A minimum distance of 14 inches is required from the furnace to the elbow, Tee or plenum end take-off of the main supply duct (Please see Fig. 3).

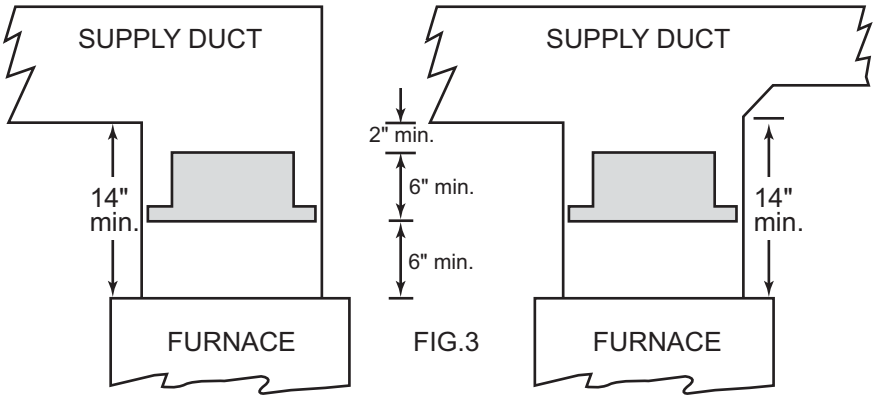
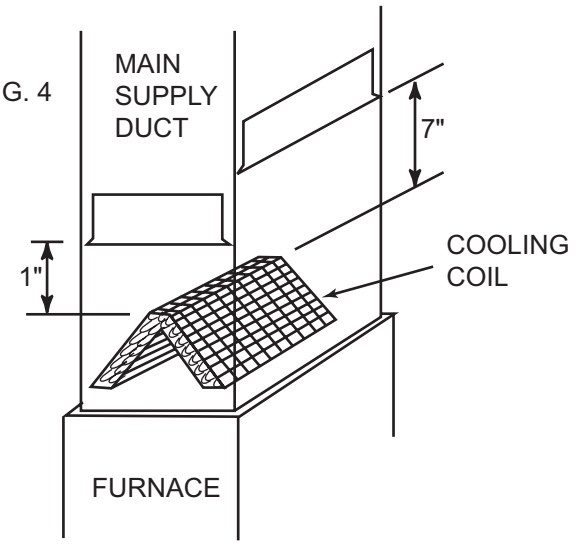


FIG.3

If a cooling coil is installed in the warm air plenum a minimum distance of 1” or 7” is required between the top of the cooling coil and the add-on heater (depending from which side of the plenum the add-on heater is inserted). (Please see Fig. 4) In both cases, a minimum distance of 2” must be kept between the top of the add-on heater and the elbow, Tee or plenum-end take off of the main supply duct.

FIG. 4



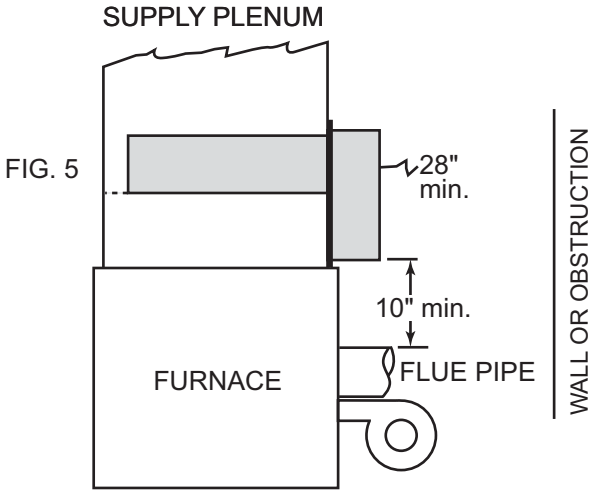


FIG. 5

SERVICE CLEARANCE AND CLEARANCE FROM FLUE PIPE

The heater may be installed on any available side of the plenum. An installation and service clearance of 28 inches is required from the heater control box to a wall, partition or any other obstruction.
If the heater is installed on the same side as the flue pipe a minimum clearance of 10 inches must be maintained between the flue pipe and the heater control box. (Please see Fig. 5)
Select the plenum side, which offers the most space for installation and service.

VERY IMPORTANT

BAFFLES MUST ASSURE MAXIMUM AIR FLOW OVER THE HEATING ELEMENTS.

- Screw the baffles to bottom flanges of casing, as shown in Fig. 6.
- Cut baffles to size allowing ***only*** 1/8” clearance for insertion of heater.

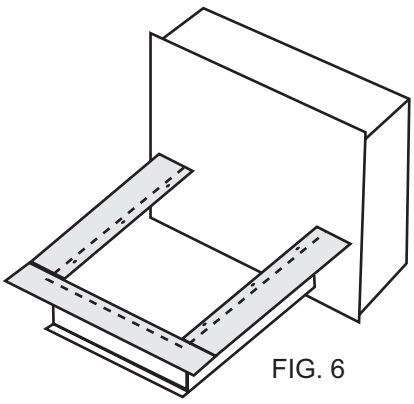


FIG. 6

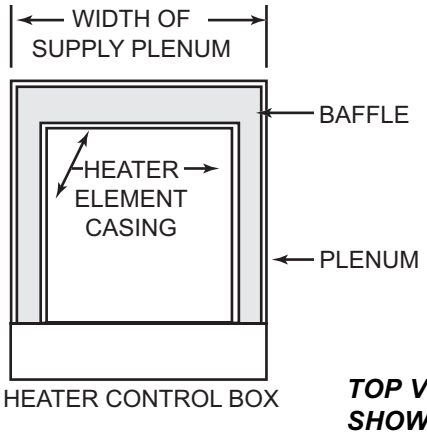


FIG. 7

TOP VIEW OF PLENUM SHOWING INSTALLED HEATER AND BAFFLES.

AIR FLOW

All the air from the furnace **must** pass through the heater element. If the heater element casing is smaller than the plenum the space between the plenum and the element casing must be blocked off with baffles. (Please see Fig. 7)

HEATER UP FLOW MOUNTING

Cut out heater opening at a minimum distance of 6 inch
from the furnace. Center the opening on the plenum.
Provide slots for insertion if baffles are installed.
(Please see Fig. 8).

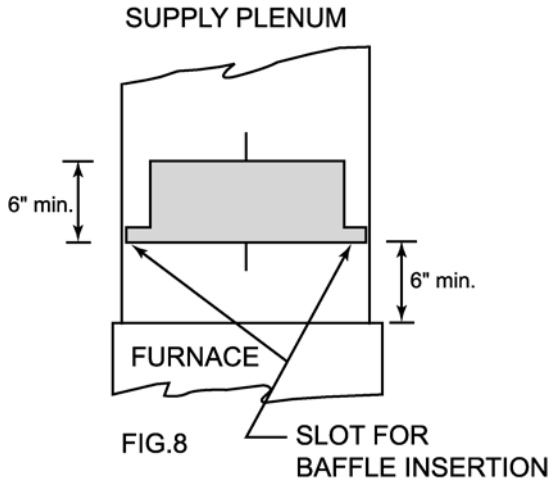


FIG.8

Note: The 6 inch dimension from the top of the furnace
the heater opening in the plenum may be increas
If increased, 14 inch minimum dimensions in Fig.
must be increased accordingly.

Slip the heater element into the opening. Make su
that the opening and slots are entirely covered by
the heater mounting flanges. Secure the heater to the plenum by means of metal screws
through the pre-drilled holes.

DOWN FLOW MOUNTING

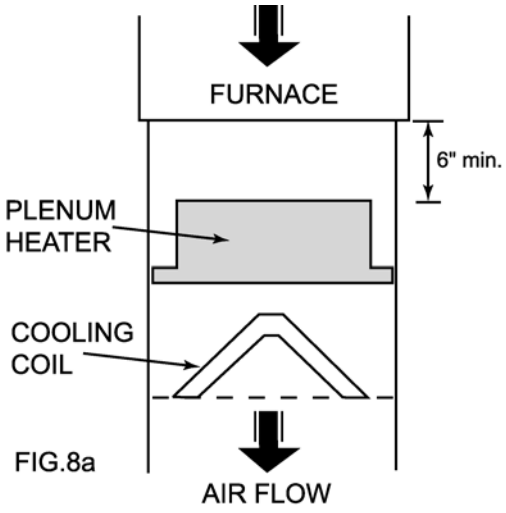


FIG.8a

HORIZONTAL MOUNTING

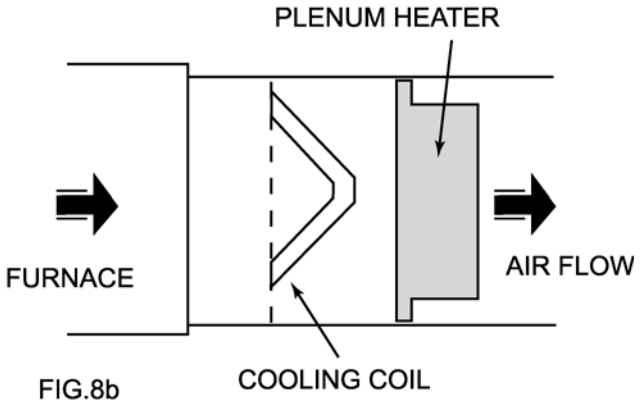
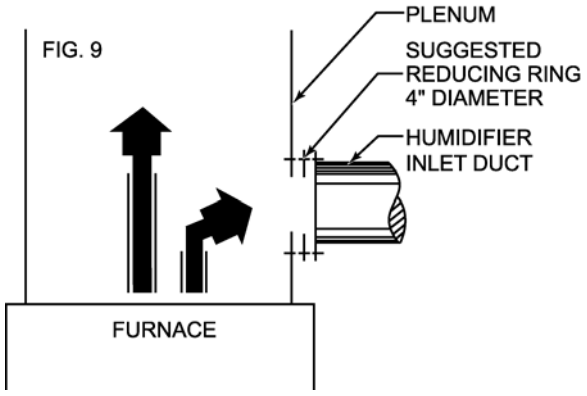


FIG.8b

HUMIDIFIER

DO NOT USE PAN & PLATE TYPE HUMIDIFIERS
WITH THE WATER RESERVOIR INSIDE
THE WARM AIR SUPPLY PLENUM.

Only «Pressure Differential» type humidifiers
(preferably a power humidifier) should be used.
If the round inlet duct of the humidifier is connected
on the hot side of the heater, it is strongly recommended
to insert a reducing ring between the round inlet duct of
the humidifier and the opening in the plenum such
that the effective opening for the humidifier will
approximate 4” in diameter. This will reduce the volume
of short-circuited air through the humidifier connection
(Please see Fig. 9).



ELECTRICAL SECTION Common to TU and TU-DFC models

1- **Disconnect** all power sources before opening electrical boxes and working within.
2- Read the nameplate and markings carefully and consult the **wiring diagram** before you start wiring.
3- Wires and protective equipment should be sized according to the **National Electrical Code** requirements.
4- Use only wires suitable for at least 75°C. Consult the table "**Characteristics**" to find the number of feeders required.
5- Connect **Thermostat** wires to terminals on heater as shown on wiring diagram.
6- **Anticipation**. Set the room thermostat heat anticipator at 0.2. Perform start-up and required field tests. Please see Fig. 10 for schematic wiring. (DFC model is shown).
7- Wire heater to furnace as shown on the wiring diagram. For two stage control and standard plenum heater, remove jumper from terminals 1 and 2 on heater and wire with isolation relay to W2 (second stage) on furnace.

ELECTRICAL SECTION Specific to model TU-DFC

8- Connect load management control to terminals OP and R on heater.

START-UP for Model TU (mono-energy)

1- Do required fields tests after installation of the Add-on Heater as detailed on page 4.
2- Set the thermostat above the room temperature.
3- Stages will sequence ON at 5 seconds interval.
4- Measure the amperage drawn by the heater and compare it with the one shown on the nameplate. When the thermostat is satisfied, the stages will sequence OFF at 5 seconds interval.
5- Make sure the fan is ON when the heater is energized.
6- Set the room thermostat to the desired set point.
7- Your heater is now ready and functional.

SEQUENCE OF OPERATION for Model TU-DFC (dual-energy)

1- The heater is provided with a two-position mode selector switch. In the "gas / oil" mode the room thermostat will call upon the furnace to maintain the house temperature at the level desired by the user. The "Dual-Energy" mode gives automatic control to the outdoor thermostat or other switching signal for dual-energy control. When the contacts are closed, the electric mode is selected. When the contacts are open, the "gas / oil" mode is selected. A green pilot light indicates the mode in operation.

2- An electronic fault sensor will automatically transfer from one mode to the other in case of failure of one system. A mode is considered to have failed when it is unable to satisfy the room thermostat for more than 2 hours.

START-UP for Model TU-DFC (Dual-energy)

1- Do required fields tests after installation of the Add-on Heater as detailed on page 4.
2- The heater is supplied with a built-in 2 position mode selector switch.
   ( ) position - Heating by means of original furnace.
   ( ) position - Dual-energy mode.
3- Simulate a heating demand by setting the room thermostat above the room temperature.
4- Switch the mode selector to position ( ) and check if the burner responds to thermostat demand.
5- Switch the mode selector to the dual-energy position ( ). If you jump terminals OP and R the electric mode is selected. The fan will start and the heating elements will come on in sequence at 5 seconds interval. Measure the amperage drawn by the heater and compare it with the one shown on the nameplate. If you disconnect the load management control wires the “gas / oil” mode should be selected.
6- Switch the mode selector to the desired position and set the room thermostat to the desired set point.
7- Your heater is now ready and functional.

Characteristics

Models	kW @ 240V	Heating Sequences	Current (Amps)	
Staged Dual-energy			Plenum Heater	Breaker
T-5 U-DFC	5	1	20.8	30
T-10 U-DFC	10	2	41.6	60
T-15 U-DFC	15	3	62.5	2 x 40
T-18 U-DFC	18	4	75.0	2 x 50
T-20 U-DFC	20	4	83.3	2 x 60
T-25 U-DFC	25	4	104.0	3 x 50
T-30 U-DFC	30	4	124.0	3 x 60
Modulating Dual-energy				
T-10 U-DFC-MOD	10	2	41.6	60
T-15 U-DFC-MOD	15	3	62.5	1 x 60 1 x 30
T-18 U-DFC-MOD	18	4	75.0	2 x 50
T-20 U-DFC-MOD	20	4	83.3	2 x 60
T-25 U-DFC-MOD	25	5	104.17	2 x 60 1 x 30
T-30 U-DFC-MOD	30	5	125.0	2 x 60 1 x 40

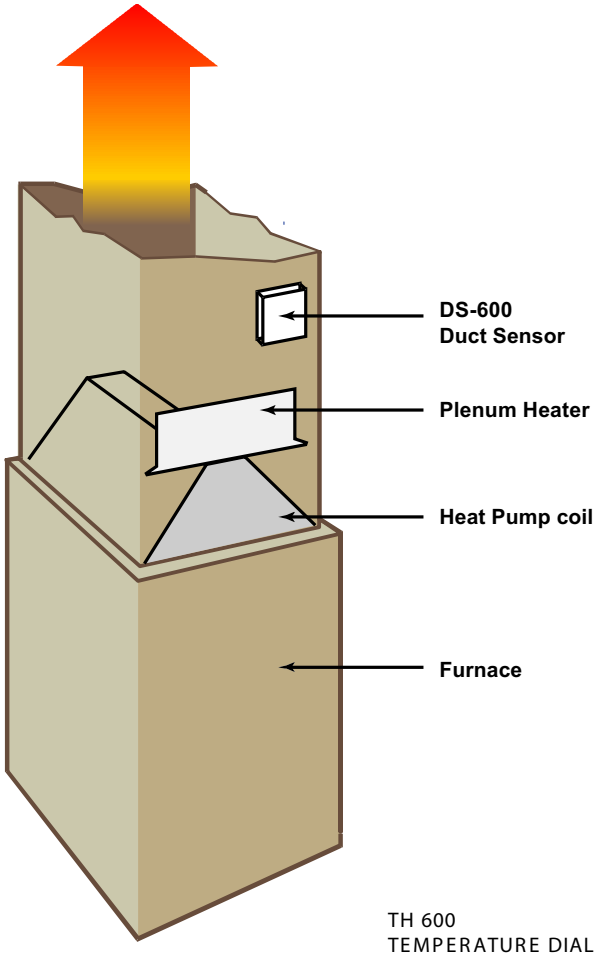
Modulating Plenum Heater Instructions

Installation

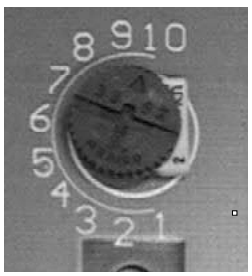
1. Prior to installation, perform field tests as detained on page 4 of this manual.
2. Install modulating plenum heater in plenum per instructions on pages 5 – 7 of this manual.
3. The DS-600 plenum temperature sensor is installed from 6" to 12" downstream of the plenum heater as show below.

Wiring

1. Wire unit per instructions on page 8 of this manual.
2. If installing plenum heater with a heat pump system, use a heat pump thermostat and adjustable outdoor temperature sensor/thermostat.
3. If installing plenum heater with a standard heating/cooling system, use a standard heating/cooling thermostat."
4. Wire plenum heater to thermostat and heating/cooling equipment per attached wiring diagram.
5. Wire DS-600 plenum temperature sensor to terminals labelled “WT” on plenum heater PC board.
6. Set desired plenum discharge temperature using adjustable dial on plenum heater PC board. Use reference chart below for set point.



TH 600
TEMPERATURE DIAL
SET POINT



TH 600 Temperature Set Point

	#1	#2	#3	#4	#5	#6	#7
C^{O}	43.3	45	47.7	53.4	56.7	62.8	68.3
F^{O}	110	113	118	128	134	145	155

Modulating Plenum Heater Instructions

Sequence of operation, modulating plenum heater with heat pump

1. When the utility load management control is closed and outdoor temperature is above the set point of the outdoor thermostat, heat pump / electric heat is selected as first stage. With a call for heat, the heat pump will start and provide heat. If the DS-600 temperature sensor senses plenum temperature below the set point of the dial on the plenum heater control board, the plenum heater elements will energize, supplementing the heat provided by the heat pump and modulate to maintain the desired plenum temperature. If the utility load management control is opened, the fossil fuel back up will be selected.
2. When the utility load management control is closed and outdoor temperature is below the set point of the outdoor thermostat, the heat pump will be locked out. With a call for heat, the plenum heater will provide the full heat load and modulate the elements to maintain the desired plenum temperature. If the utility load management control is opened, the fossil fuel back up will be selected.
3. When the heat pump switches to defrost, the fossil fuel back up will be selected and the plenum heater will be locked out. After defrost, the system will switch back to heat pump / electric heat mode.
4. When the utility load management control is open, with a call for heat, the fossil fuel back up will be selected.
5. To manually select fossil fuel mode, switch heat pump thermostat to emergency.

Sequence of operation, modulating plenum heater with standard heating/cooling system

1. When the utility load management control is closed, with a call for heat, the plenum heater will provide the full heat load and modulate the elements to maintain the desired plenum temperature. If the utility load management control is opened, the fossil fuel back up will be selected.
2. When the utility load management control is open, with a call for heat, the fossil fuel back up will be selected.

Modulating Plenum Heater Trouble Shooting Guide

1. **Before you start**; Identify your system, make sure that you are using the appropriate wiring diagram that matches the system components:
   A. Furnace (Single Stage or Two Stage, Variable Speed or Standard Drive)
   B. Cooling (Heat Pump or A/C, 1 stage or 2 stage)
   C. Thermostat (With or Without outdoor sensor?)
2. **If Heat Pump**; does O/B energize in heating or cooling mode? Jumpers on the Relay Board are in the normally closed position, Jumpers must be put to the normally open position if you energize O/B for heating. Same at your Thermostat.

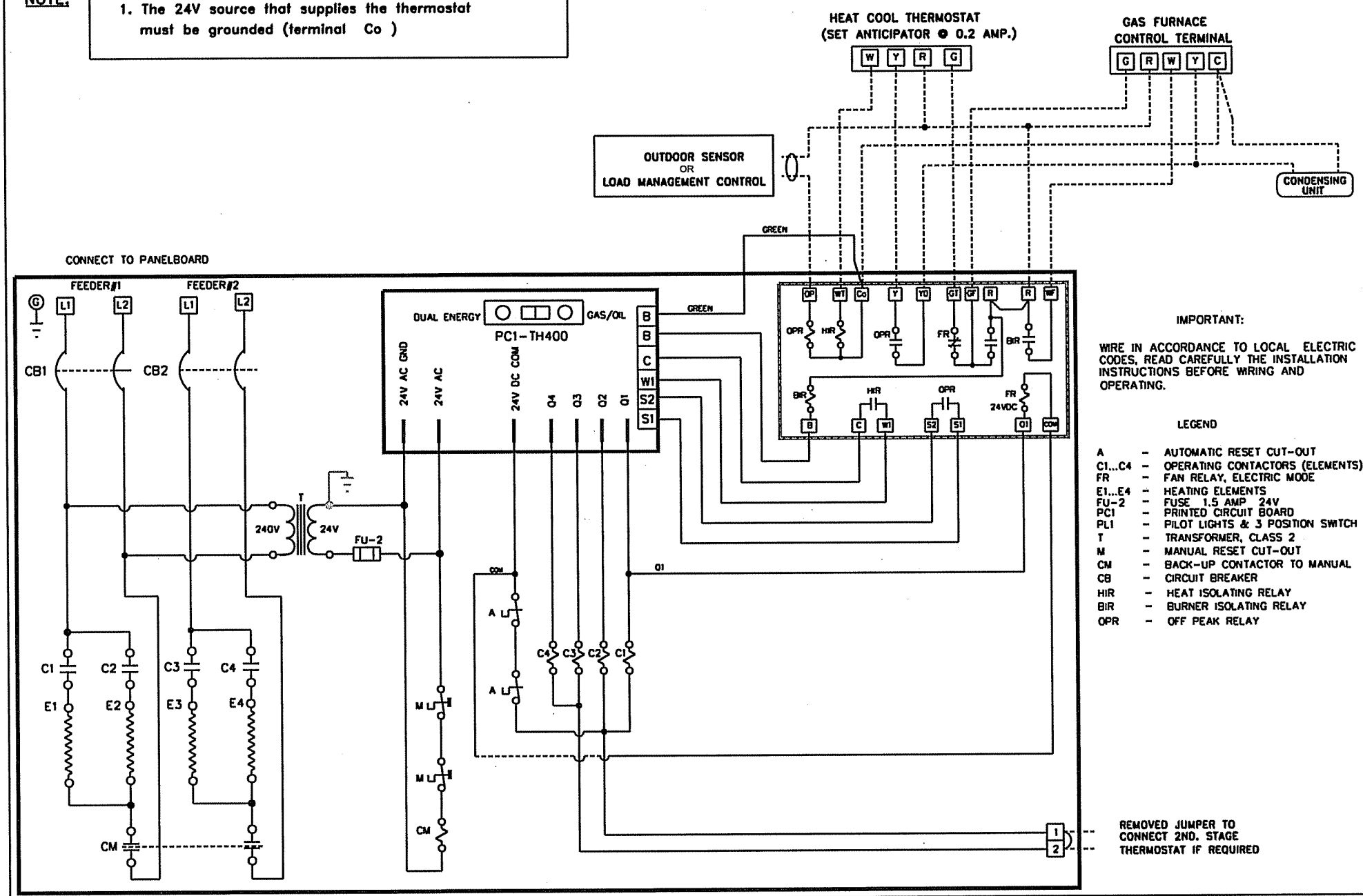
Step	Issue	What to Check	Possible Cause/Problem
1	No Heat	**On Relay Board Terminal Strip Check for 24 VAC to: OP,Y,R** If No 24 VAC (See Possible Causes) If Yes: Continue to step 2	Off Peak Relay, Thermostat, Wiring and/or Transformer at Furnace
2	No Heat	**On the TH600 Control Board: Check for continuity between C and W1, S1 and S2.** If None (See Possible Causes) If Yes Continue to step 3	Bad Relay Board. O/B not correct as in "Before you Start" section.
3	No Heat	**Double check main power to Plenum Heater transformer. Check Hi Limits manual and auto (Ohm or 24VAC). Reset Manual Limits (listen for click). Make sure back up contactor is pulled in. Check transformer fuse.** If Yes (Continue to step 4) If Not (see possible causes)	Tripped Breaker, Bad High Limits; Auto/Manual, Bad Contactor, Blown Fuse
4	No Heat	**Remove wires from duct temperature sensor at the TH-600 board. Does unit start?** If yes; see possible causes (A). If no; see possible causes (B)	(A): Bad duct temperature sensor (B) Faulty TH-600 Board
5	Insuffcient Heat	**Turn Dial on TH-600 board higher, check for green led lights on TH-600 board**. If no lights; see possible causes. If yes; continue	Heat Pump is putting out enough bTu's to satisfy heat load on its own.
6	Insuffcient Heat	**Perform an amp draw**; If amperage is correct in refrence to name plate on unit; see possible causes. If not; continue	Did you use the proper diagram (variable speed?), Is kW load properly sized, Dial on the TH-600 board not in the correct setting for discharge temp. needed
7	Insuffcient Heat	**Check for 24 Volts DC to SSR relays** If no: see possible causes If yes; continue	TH-600 Board not functioning properly
8	Insuffcient Heat	**Check the high voltage side of SSR relay contacts** (Should be 0 VAC) If not; see possible causes	SSR Relay is faulty, Broken/Bad element (Ohm out to make sure)

Thermolec Standard Plenum Heater Troubleshooting Guide

Step	Issue	What to Check	Possible Cause/Problem
1	No Heat-No Fan	**On Relay Board Terminal Strip Check for 24 VAC to: OP,R,WT** If Not (See Possible Cause) If Yes: Continue to step 2	Furnace Transformer, Wiring to Thermostat, Off Peak Relay
2	No Heat-No Fan	On the TH400 Board: **Check for continuity between C and W1, S1 and S2** If Not (See Possible Causes) If Yes Continue to step 3	Bad Relay Board
3	No Heat-No Fan	**Check for 24 VAC at Plenum Heater Transformer and Fuse** If No: See Cause (A) If Yes: See Cause (B)	(A): Check for Voltage at Breakers, Transformer (B): TH-400 Board Faulty
4	No Heat- Blower is on	**Check for Continuity on** Auto High Limits, Manual High Limits and Back Up Contactor	Air flow issues, Low CFM, not wired for variable speed blower, baffles not installed correctly, faulty back up contactor or bad high limits.
5	No Electric Heat or No A/C	**Check for 24 VAC** at OP terminal on Relay Board	Wired Improperly, Bad Off Peak Relay, Bad Load Control box at house or Utility is currently in a control period.
6	Insuffcient Heat	**Check Amp draw:** If Drawing full amps: heater is operating at design spec (C). If not: Continue to step 7	(C): Airflow or Unit is Undersized
7	Insuffcient Heat	**Check for 24 VDC to Operating Contactor C1-C4** If No: See cause (D) If Yes: Continue to step 8	(D): Faulty TH-400 Board
8	Insuffcient Heat	**Are the Operating Contactor(s) closing?** If Not: Cause (E) If Yes: Continue to step 9	(E) Bad Operating Contactor
9	Insuffcient Heat	**Ohm out Elements and Check Element Amp Draws** If full open: Cause (F) If Amp Draw is incorrect: Cause (F)	(F) Bad Element

NOTE:

1. The 24V source that supplies the thermostat must be grounded (terminal Co)



IMPORTANT:

WIRE IN ACCORDANCE TO LOCAL ELECTRIC CODES, READ CAREFULLY THE INSTALLATION INSTRUCTIONS BEFORE WIRING AND OPERATING.

LEGEND

A	–	AUTOMATIC RESET CUT-OUT
C1...C4	–	OPERATING CONTACTORS (ELEMENTS)
FR	–	FAN RELAY, ELECTRIC MODE
E1...E4	–	HEATING ELEMENTS
FU-2	–	FUSE 1.5 AMP 24V
PC1	–	PRINTED CIRCUIT BOARD
PL1	–	PILOT LIGHTS & 3 POSITION SWITCH
T	–	TRANSFORMER, CLASS 2
M	–	MANUAL RESET CUT-OUT
CM	–	BACK-UP CONTACTOR TO MANUAL
CB	–	CIRCUIT BREAKER
HIR	–	HEAT ISOLATING RELAY
BIR	–	BURNER ISOLATING RELAY
OPR	–	OFF PEAK RELAY

REMOVED JUMPER TO CONNECT 2ND. STAGE THERMOSTAT IF REQUIRED

TITLE/TITRE

Standard Plenum Heater – Standard Furnace

THERMOLEC LTEE LTD

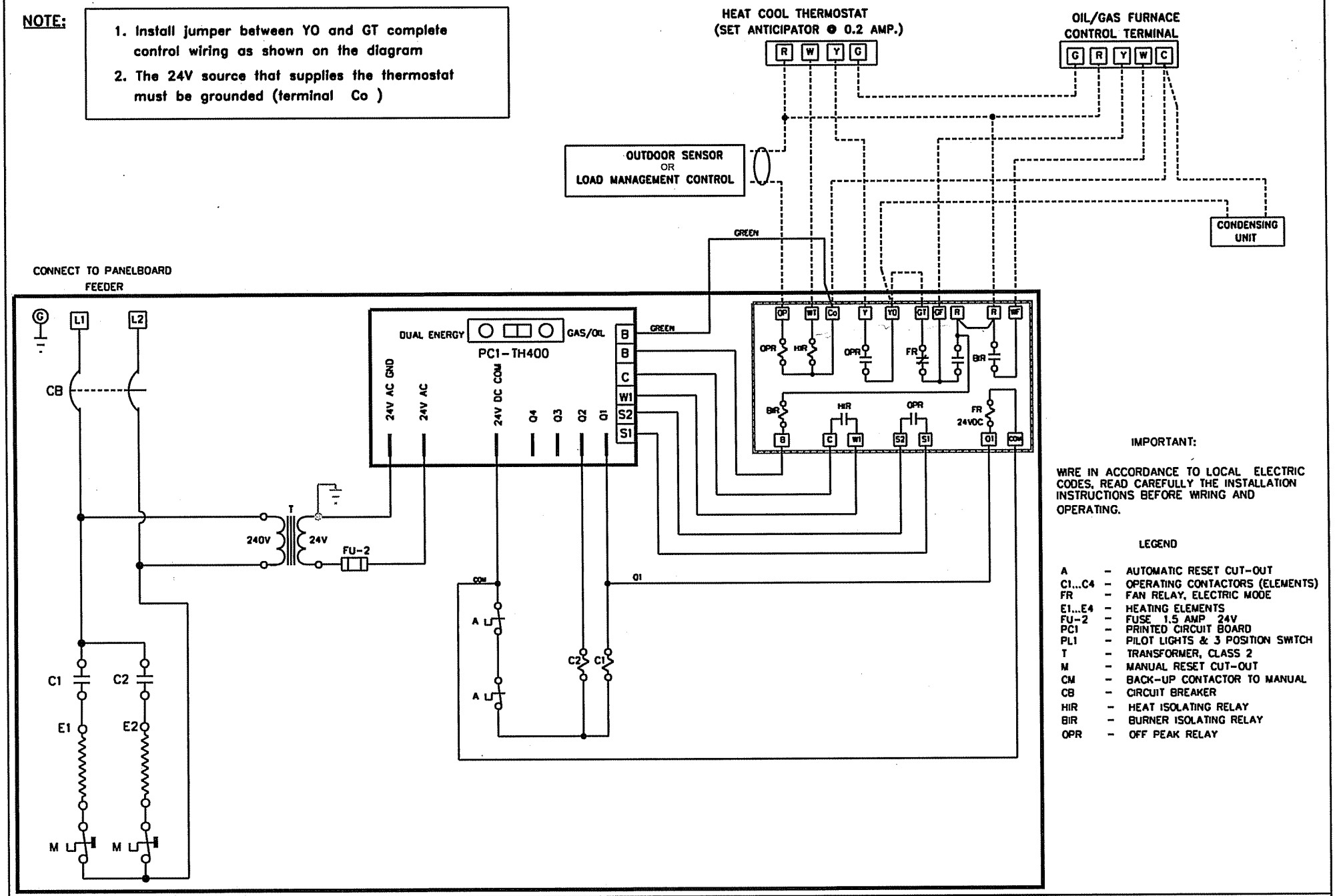
MONTREAL – CANADA

DRAWING NO.8I-ENERGIE TH400-T15-T18-T20-US(OPR)CONT:

DATE	PER	
09-11-07		

NOTE:

1. Install jumper between YO and GT complete control wiring as shown on the diagram
2. The 24V source that supplies the thermostat must be grounded (terminal Co)



IMPORTANT:

WIRE IN ACCORDANCE TO LOCAL ELECTRIC CODES, READ CAREFULLY THE INSTALLATION INSTRUCTIONS BEFORE WIRING AND OPERATING.

LEGEND

A	–	AUTOMATIC RESET CUT-OUT
C1...C4	–	OPERATING CONTACTORS (ELEMENTS)
FR	–	FAN RELAY, ELECTRIC MODE
E1...E4	–	HEATING ELEMENTS
FU-2	–	FUSE 1.5 AMP 24V
PC1	–	PRINTED CIRCUIT BOARD
PL1	–	PILOT LIGHTS & 3 POSITION SWITCH
T	–	TRANSFORMER, CLASS 2
M	–	MANUAL RESET CUT-OUT
CM	–	BACK-UP CONTACTOR TO MANUAL
CB	–	CIRCUIT BREAKER
HIR	–	HEAT ISOLATING RELAY
BIR	–	BURNER ISOLATING RELAY
OPR	–	OFF PEAK RELAY

TITLE/TITRE

Standard Plenum Heater – Variable speed Furnace

THERMOLEC LTEE LTD

MONTREAL – CANADA

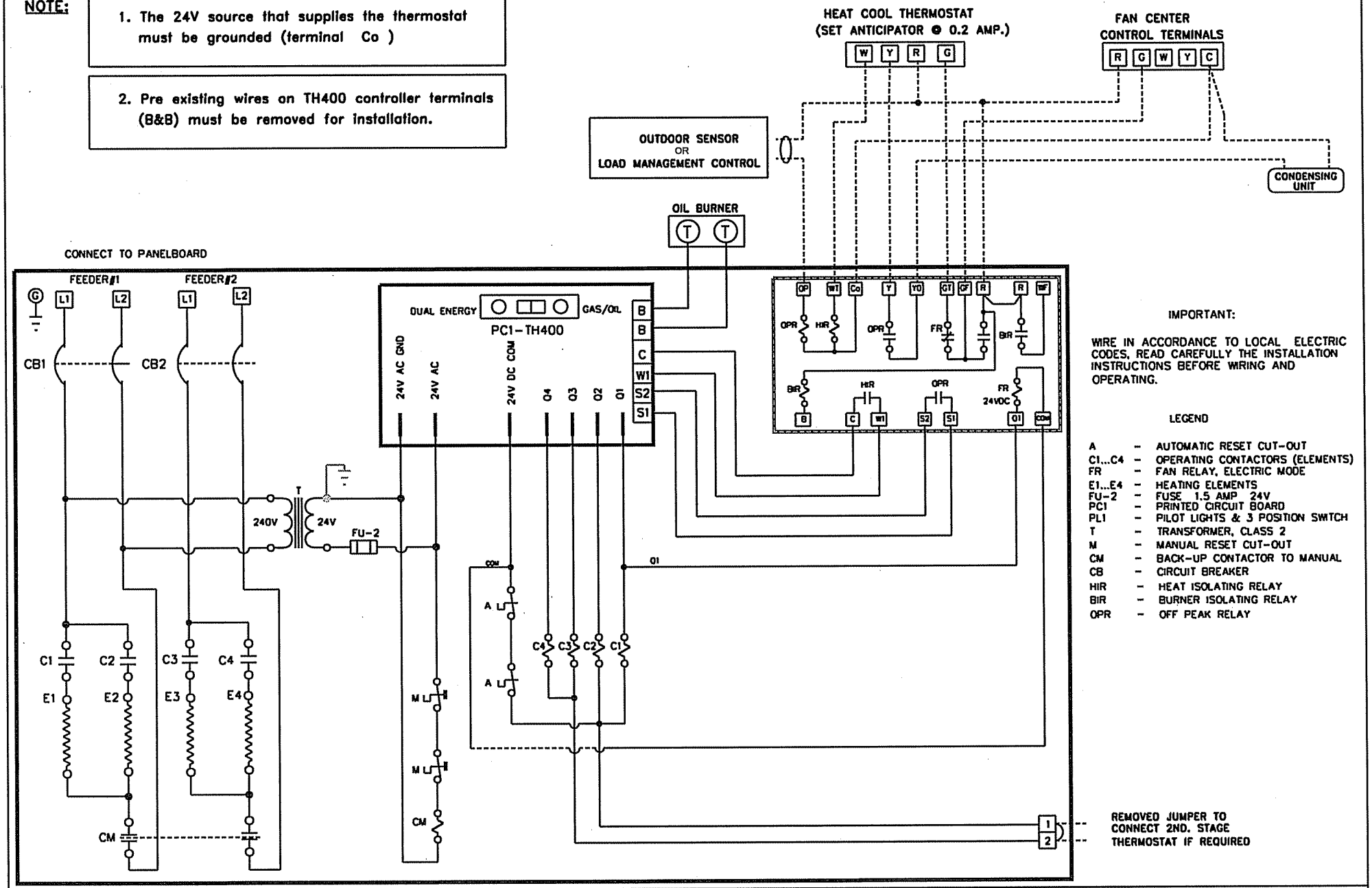
DRAWING NO. 81-ENERGIE TH400-T6-T10-US(OPR) var. sp

DATE	PER	
22-05-08		

OIL BURNER WITH FAN CENTER

NOTE:

1. The 24V source that supplies the thermostat must be grounded (terminal Co)
2. Pre existing wires on TH400 controller terminals (B&B) must be removed for installation.



IMPORTANT:

WIRE IN ACCORDANCE TO LOCAL ELECTRIC CODES, READ CAREFULLY THE INSTALLATION INSTRUCTIONS BEFORE WIRING AND OPERATING.

LEGEND

A	–	AUTOMATIC RESET CUT-OUT
C1...C4	–	OPERATING CONTACTORS (ELEMENTS)
FR	–	FAN RELAY, ELECTRIC MODE
E1...E4	–	HEATING ELEMENTS
FU-2	–	FUSE 1.5 AMP 24V
PC1	–	PRINTED CIRCUIT BOARD
PL1	–	PILOT LIGHTS & 3 POSITION SWITCH
T	–	TRANSFORMER, CLASS 2
M	–	MANUAL RESET CUT-OUT
CM	–	BACK-UP CONTACTOR TO MANUAL
CB	–	CIRCUIT BREAKER
HIR	–	HEAT ISOLATING RELAY
BIR	–	BURNER ISOLATING RELAY
OPR	–	OFF PEAK RELAY

TITLE/TITRE

Standard Plenum Heater – Standard Furnace

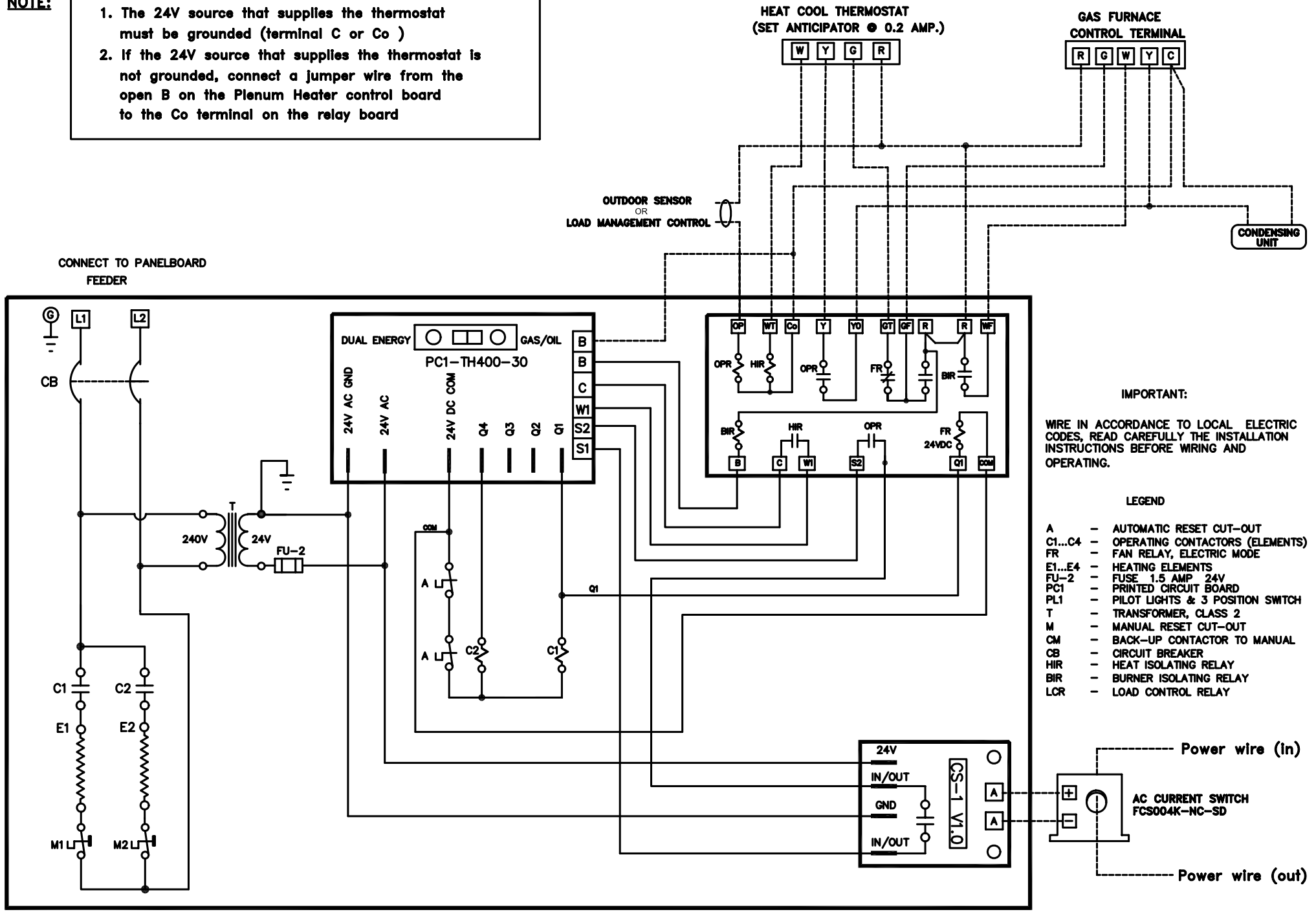
THERMOLEC LTEE LTD
MONTREAL – CANADA

DRAWING NO. 81-ENERGIE TH400-T15-T18-T20-US(OPR)CONT:

DATE	PER	
09-11-07		

NOTE:

1. The 24V source that supplies the thermostat must be grounded (terminal C or Co)
2. If the 24V source that supplies the thermostat is not grounded, connect a jumper wire from the open B on the Plenum Heater control board to the Co terminal on the relay board



IMPORTANT:

WIRE IN ACCORDANCE TO LOCAL ELECTRIC CODES, READ CAREFULLY THE INSTALLATION INSTRUCTIONS BEFORE WIRING AND OPERATING.

LEGEND

A	–	AUTOMATIC RESET CUT-OUT
C1...C4	–	OPERATING CONTACTORS (ELEMENTS)
FR	–	FAN RELAY, ELECTRIC MODE
E1...E4	–	HEATING ELEMENTS
FU-2	–	FUSE 1.5 AMP 24V
PC1	–	PRINTED CIRCUIT BOARD
PL1	–	PILOT LIGHTS & 3 POSITION SWITCH
T	–	TRANSFORMER, CLASS 2
M	–	MANUAL RESET CUT-OUT
CM	–	BACK-UP CONTACTOR TO MANUAL
CB	–	CIRCUIT BREAKER
HIR	–	HEAT ISOLATING RELAY
BIR	–	BURNER ISOLATING RELAY
LCR	–	LOAD CONTROL RELAY

TITLE/TITRE

T-10U Retro Plenum Heater

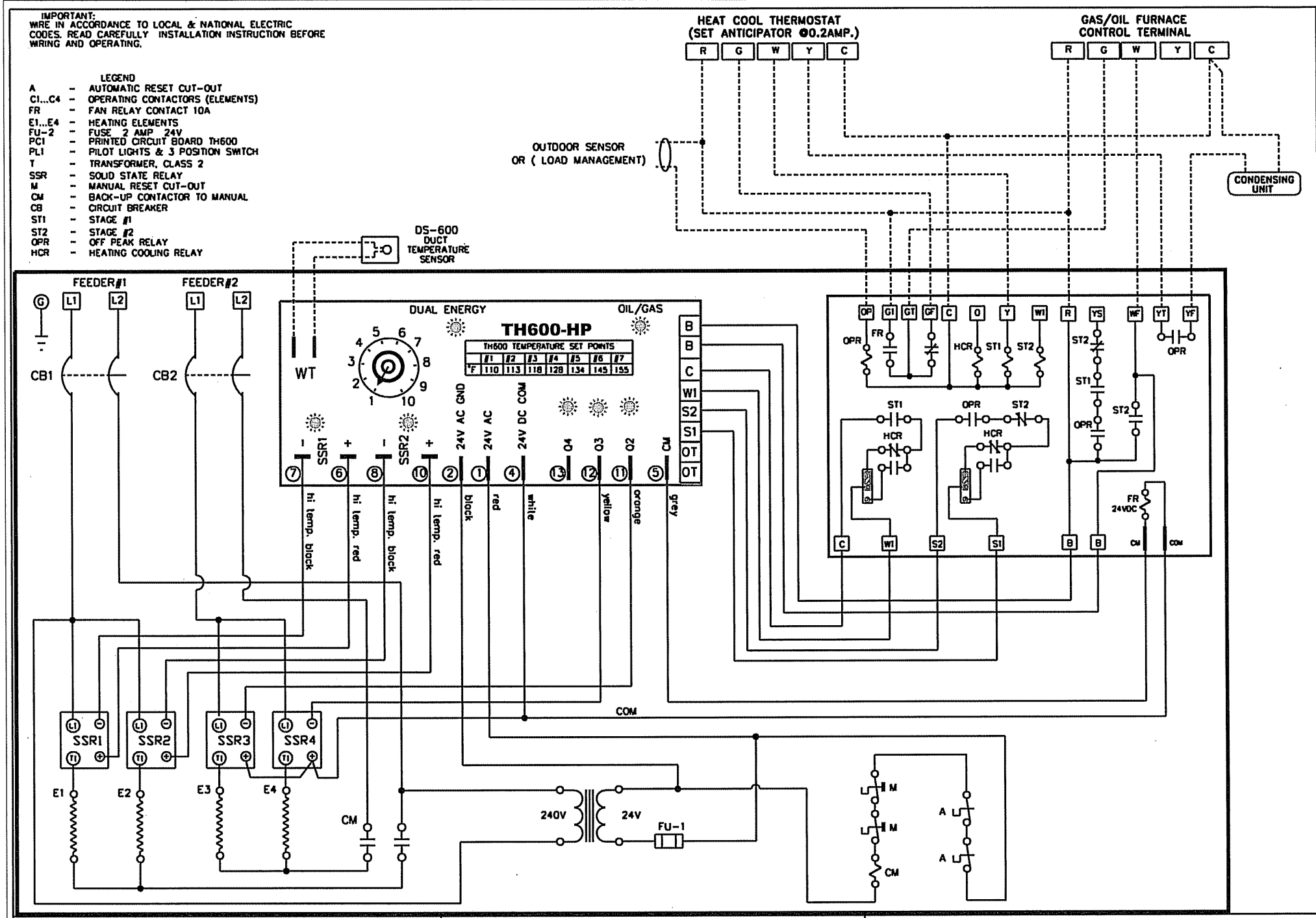
THERMOLEC

MONTREAL – CANADA

LTEE
LTD

DRAWING NO. RETRO T10-U-DFCT

DATE	PER	
14-11-07		


IMPORTANT:
WIRE IN ACCORDANCE TO LOCAL & NATIONAL ELECTRIC CODES. READ CAREFULLY INSTALLATION INSTRUCTION BEFORE WIRING AND OPERATING.
LEGEND
A - AUTOMATIC RESET CUT-OUT
C1...C4 - OPERATING CONTACTORS (ELEMENTS)
FR - FAN RELAY CONTACT 10A
E1...E4 - HEATING ELEMENTS
FU-2 - FUSE 2 AMP 24V
PC1 - PRINTED CIRCUIT BOARD TH600
PL1 - PILOT LIGHTS & 3 POSITION SWITCH
T - TRANSFORMER, CLASS 2
SSR - SOLID STATE RELAY
M - MANUAL RESET CUT-OUT
CM - BACK-UP CONTACTOR TO MANUAL
CB - CIRCUIT BREAKER
ST1 - STAGE #1
ST2 - STAGE #2
OPR - OFF PEAK RELAY
HCR - HEATING COOLING RELAY
HEAT COOL THERMOSTAT (SET ANTICIPATOR @0.2AMP.)
R G W Y C
GAS/OIL FURNACE CONTROL TERMINAL
R G W Y C
OUTDOOR SENSOR OR (LOAD MANAGEMENT)
CONDENSING UNIT
DS-600 DUCT TEMPERATURE SENSOR
FEEDER#1
FEEDER#2
G L1 L2 L1 L2
CB1
CB2
WT
DUAL ENERGY
OIL/GAS
TH600-HP
TH600 TEMPERATURE SET POINTS
°F #1 110 #2 113 #3 118 #4 128 #5 134 #6 145 #7 155
B B C W1 S2 S1 OT OT
- SSR1 + - SSR2 + 24V AC GND 24V AC 24V DC COM Q4 Q3 Q2 CM
7 6 8 10 2 1 4 13 12 11 5
hi temp. black
hi temp. red
hi temp. black
hi temp. red
black
red
white
yellow
orange
grey
OP GI GT GF C O Y W1 R YS WF YT YF
OPR FR HCR ST1 ST2
C W1 S2 S1 B B CM COM
FR 24VDC
COM
SSR1 SSR2 SSR3 SSR4
E1 E2 E3 E4
CM
240V 24V FU-1
M M CM
A A

TITLE/TITRE (STANDARD)

Modulating Plenum Heater-AC (FURNACE)

THERMOLEC LTEE LTD

MONTREAL - CANADA

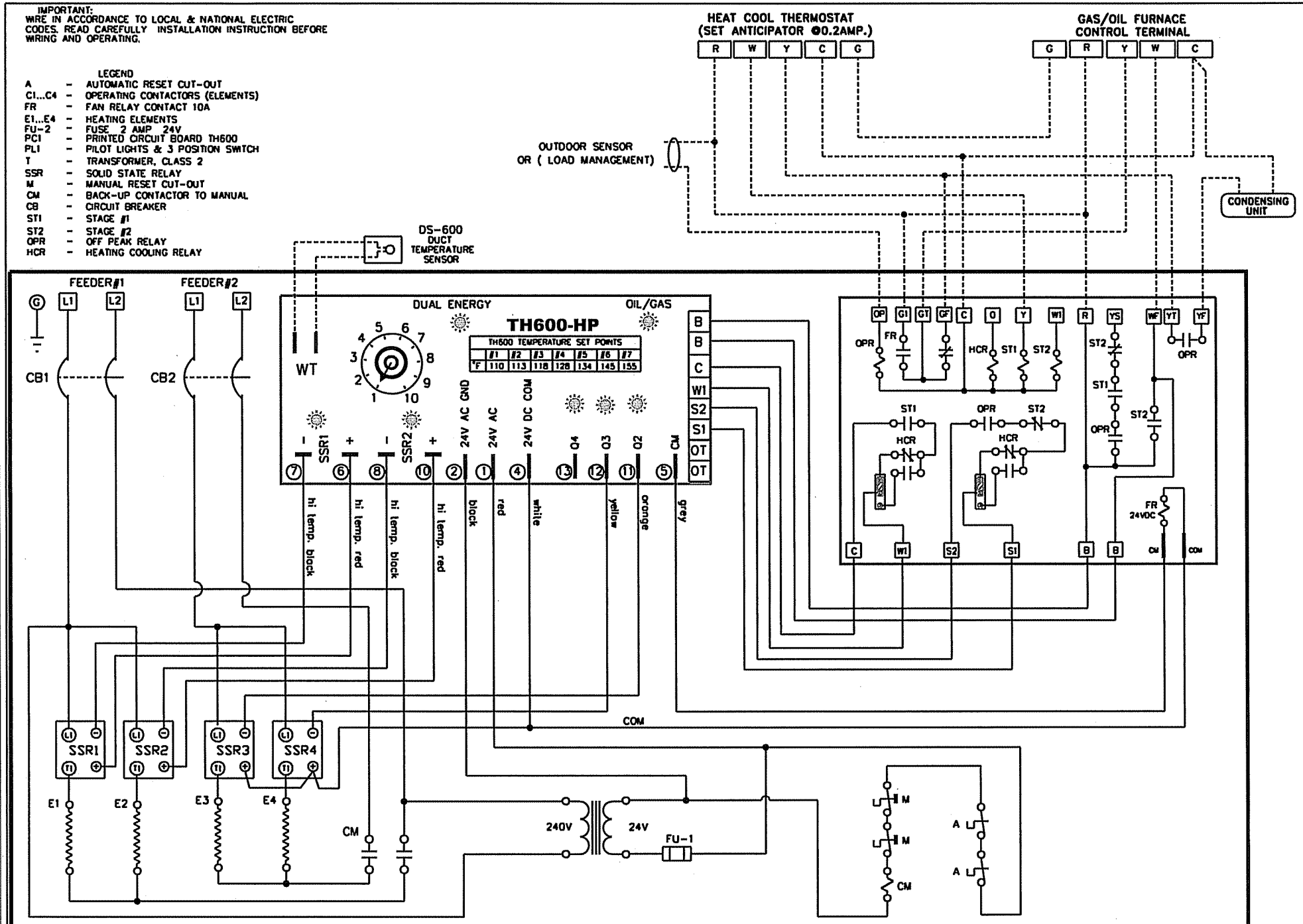
DRAWING NO TH-600 AC-T18-20-4SCR MODULATING US 1st DFC-STD

DATE	PER	
22-05-08		

IMPORTANT:
WIRE IN ACCORDANCE TO LOCAL & NATIONAL ELECTRIC CODES. READ CAREFULLY INSTALLATION INSTRUCTION BEFORE WIRING AND OPERATING.

LEGEND

A	–	AUTOMATIC RESET CUT-OUT
C1...C4	–	OPERATING CONTACTORS (ELEMENTS)
FR	–	FAN RELAY CONTACT 10A
E1...E4	–	HEATING ELEMENTS
FU-2	–	FUSE 2 AMP 24V
PC1	–	PRINTED CIRCUIT BOARD TH600
PL1	–	PILOT LIGHTS & 3 POSITION SWITCH
T	–	TRANSFORMER, CLASS 2
SSR	–	SOLID STATE RELAY
M	–	MANUAL RESET CUT-OUT
CM	–	BACK-UP CONTACTOR TO MANUAL
CB	–	CIRCUIT BREAKER
ST1	–	STAGE #1
ST2	–	STAGE #2
OPR	–	OFF PEAK RELAY
HCR	–	HEATING COOLING RELAY



TITLE/TITRE (VAR. SPEED)

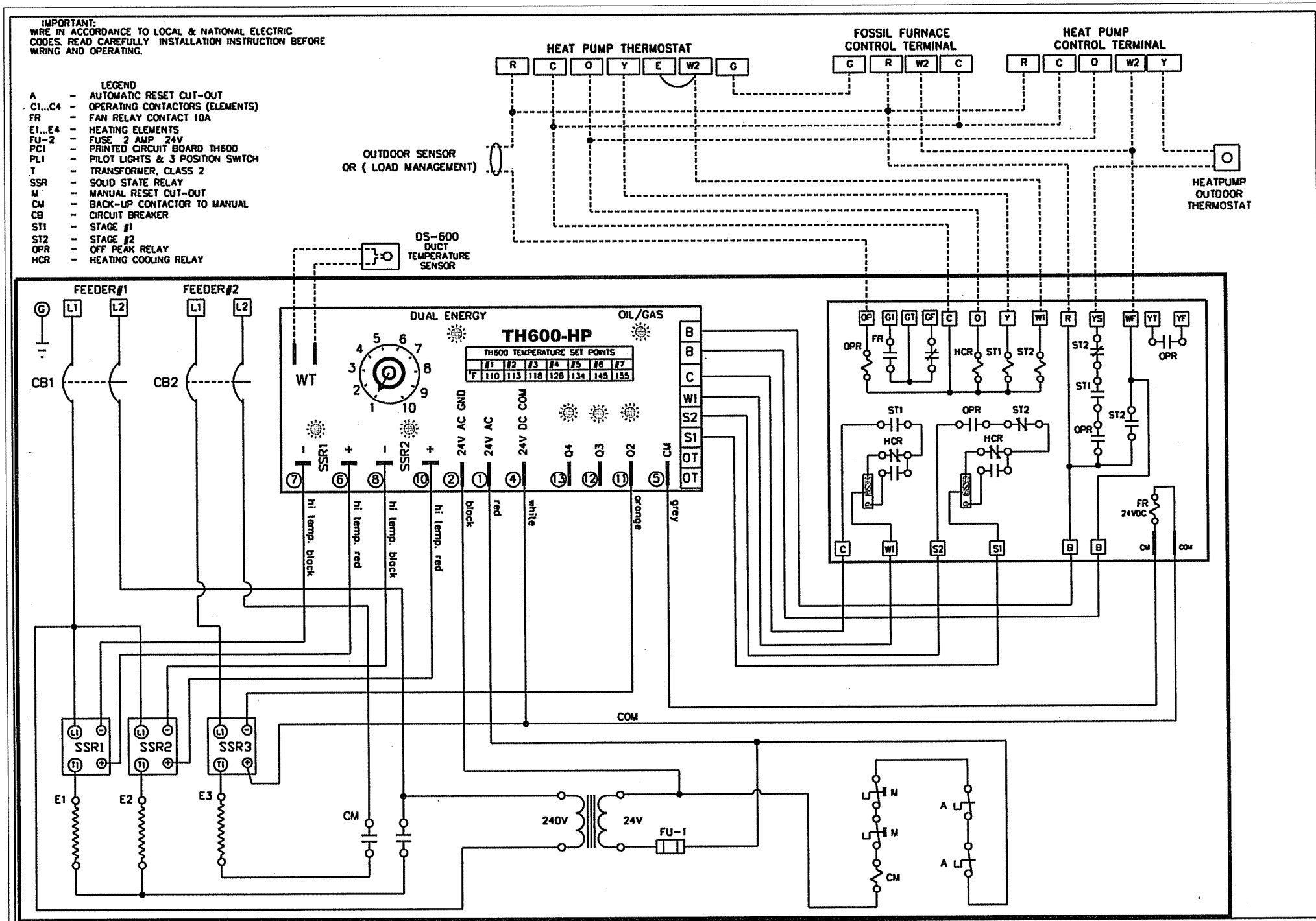
Modulating Plenum Heater–AC (FURNACE)

THERMOLEC LTEE LTD

MONTREAL – CANADA

DRAWING NO.TH-600 AC-T18-20-4SCR MODULATING US 1st DFC-VAR.

DATE	PER	
22-05-08		



TITLE/TITRE

Modulating Plenum Heater – Heat Pump

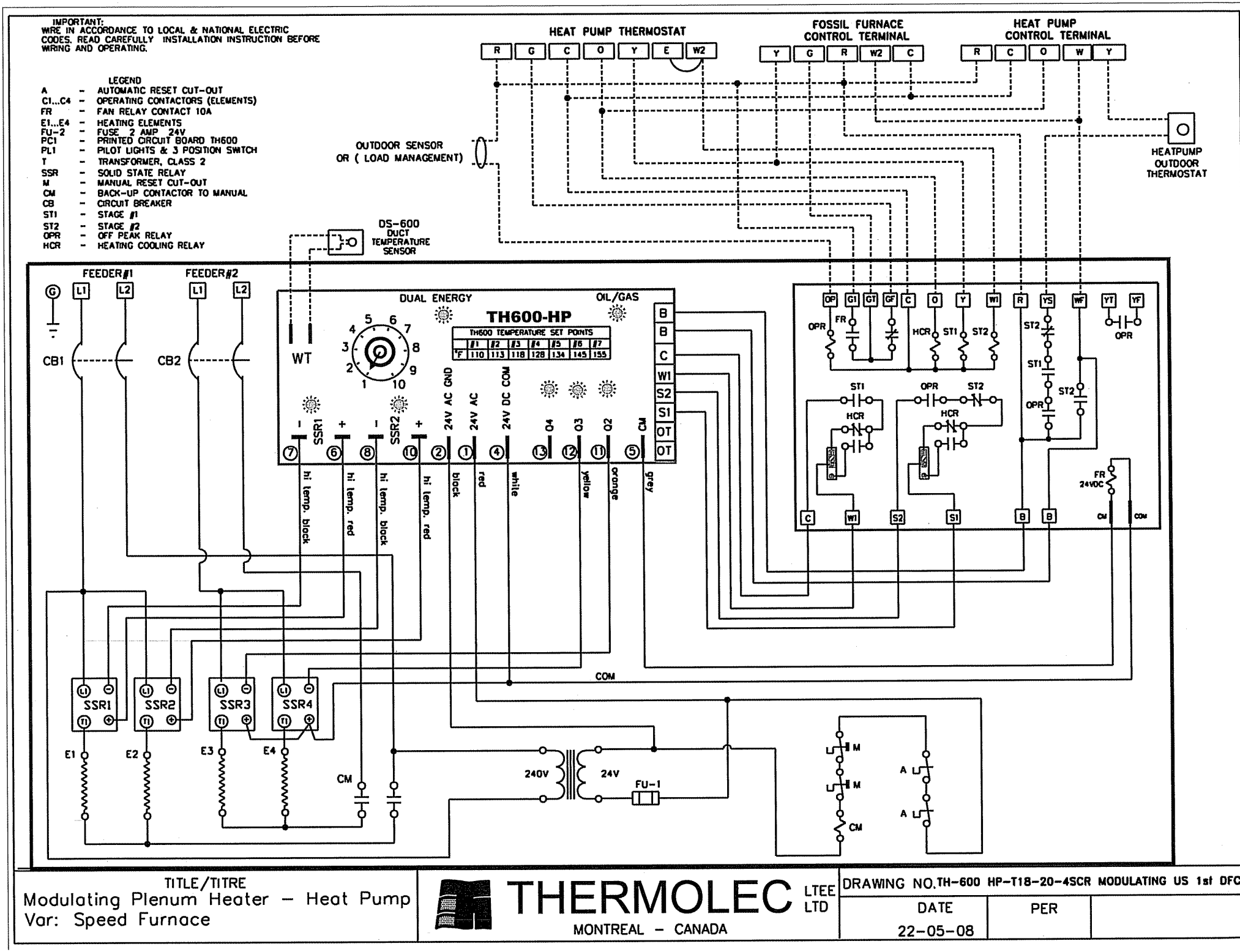
Standard Furnace

THERMOLEC LTEE LTD

MONTREAL – CANADA

DRAWING NO. TH-600 HP-T15-3SCR MODULATING US 1st DFC

DATE	PER	
16-11-07		



TITLE/TITRE

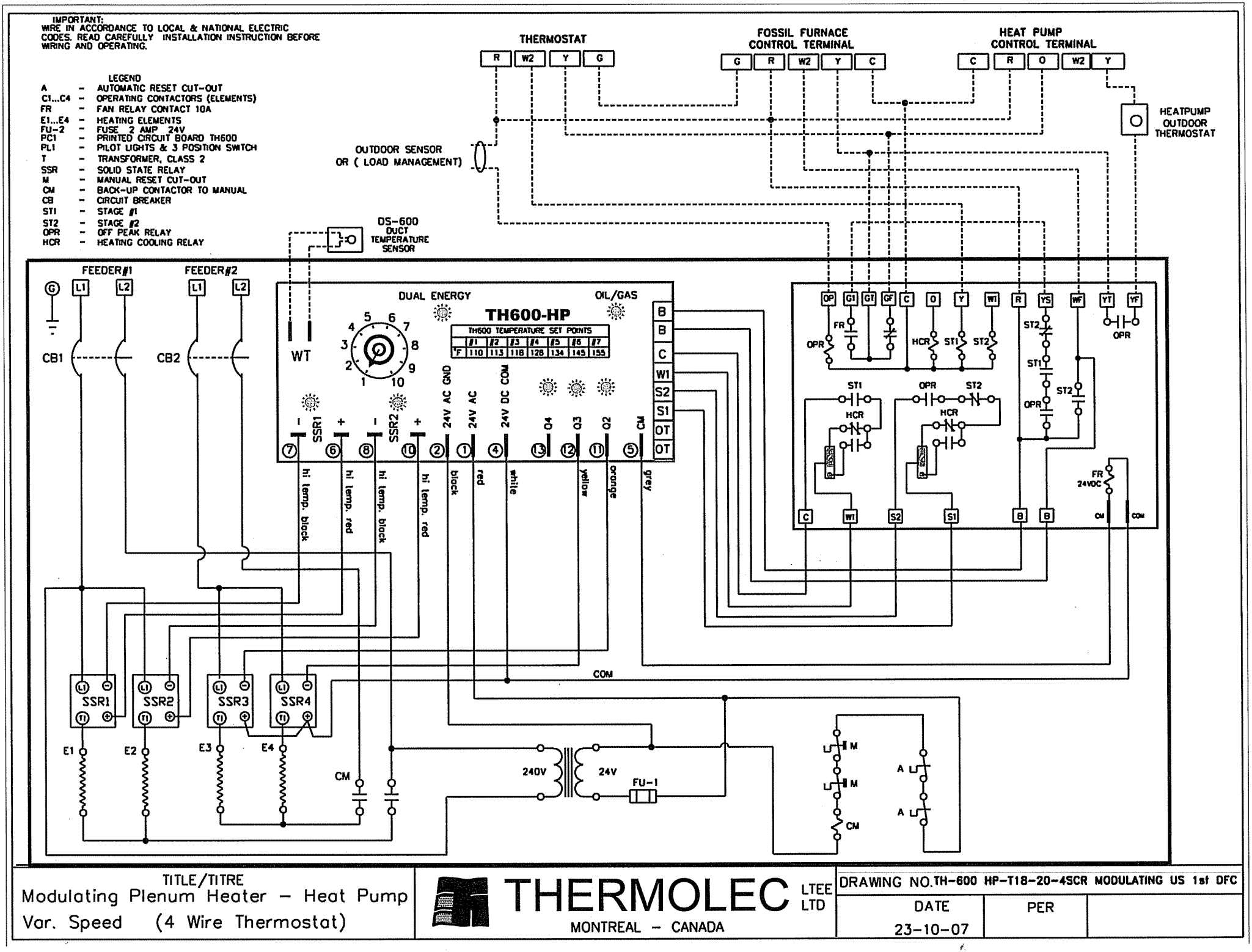
Modulating Plenum Heater – Heat Pump
Var: Speed Furnace

THERMOLEC LTEE LTD

MONTREAL – CANADA

DRAWING NO. TH-600 HP-T18-20-4SCR MODULATING US 1st DFC

DATE	PER	
22-05-08		



TITLE/TITRE

Modulating Plenum Heater – Heat Pump

Var. Speed (4 Wire Thermostat)

THERMOLEC LTEE LTD

MONTREAL – CANADA

DRAWING NO. TH-600 HP-T18-20-4SCR MODULATING US 1st DFC

DATE	PER	
23-10-07		

VISION PRO 8000

SET UP FOR USE WITH THE OUTDOOR SENSOR

SYSTEM TYPE. SELECT # 170……OPTION # 7 (2H/1C WITH AUX HEAT)

CHANGE OVER VALVE # 190…….OPTION # 0

REMOTE SENSOR # 340…….OPTION # 2

HEAT PUMP LOCKOUT # 350……. THIS IS AN INSTALLER TEMP OPTION

AUX LOCKOUT # 360……THIS IS AN INSTALLER TEMP OPTION

* SEE BACK OF MANUAL FOR EXPLANATION OF LOCK OUT SETTINGS *

VISION PRO 8000

SET UP FOR USE WITH NO OUTDOOR SENSOR

SYSTEM TYPE. SELECT # 170……OPTION # 7 (2H/1C WITH AUX HEAT)

CHANGE OVER VALVE # 190…….OPTION # 0

REMOTE SENSOR # 340…….OPTION # 0

****

NOTE: ACTUAL #'s MAY CHANGE WITH MODEL OF STAT.

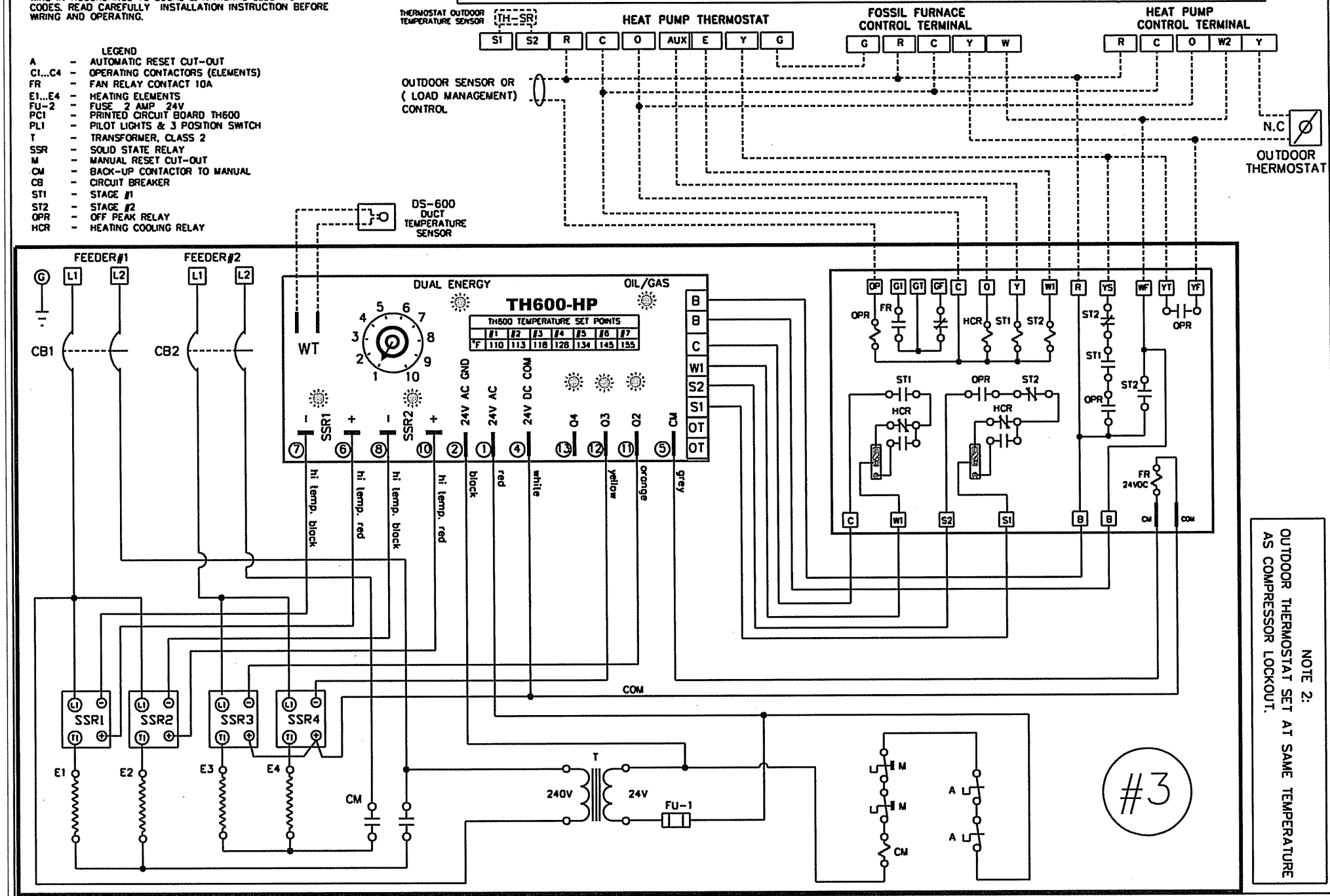
It is essential to know your stat, as well as when and why it transfers voltage.

VISON PRO 8000 WITH OUTDOOR SENSOR - VARIABLE SPEED FURNACE

IMPORTANT:
WIRE IN ACCORDANCE TO LOCAL & NATIONAL ELECTRIC CODES. READ CAREFULLY INSTALLATION INSTRUCTION BEFORE WIRING AND OPERATING.

LEGEND

A	-	AUTOMATIC RESET CUT-OUT
C1...C4	-	OPERATING CONTACTORS (ELEMENTS)
FR	-	FAN RELAY CONTACT 10A
E1...E4	-	HEATING ELEMENTS
FU-2	-	FUSE 2 AMP 24V
PC1	-	PRINTED CIRCUIT BOARD TH600
PL1	-	PILOT LIGHTS & 3 POSITION SWITCH
T	-	TRANSFORMER, CLASS 2
SSR	-	SOLID STATE RELAY
M	-	MANUAL RESET CUT-OUT
CM	-	BACK-UP CONTACTOR TO MANUAL
CB	-	CIRCUIT BREAKER
ST1	-	STAGE #1
ST2	-	STAGE #2
OPR	-	OFF PEAK RELAY
HCR	-	HEATING COOLING RELAY



TITLE/TITRE

Modulating Plenum Heater -HEAT PUMP

THERMOLEC LTEE LTD
MONTREAL - CANADA

DRAWING NO.TH-600 AC-T18-20-4SCR MODULATING US 1st DFC VAR.

DATE	PER	
21-05-08		

VISON PRO 8000 WITH OUTDOOR SENSOR - STANDARD FURNACE

IMPORTANT:
WIRE IN ACCORDANCE TO LOCAL & NATIONAL ELECTRIC CODES. READ CAREFULLY INSTALLATION INSTRUCTION BEFORE WIRING AND OPERATING.

LEGEND

A	-	AUTOMATIC RESET CUT-OUT
C1...C4	-	OPERATING CONTACTORS (ELEMENTS)
FR	-	FAN RELAY CONTACT 10A
E1...E4	-	HEATING ELEMENTS
FU-2	-	FUSE 2 AMP 24V
PC1	-	PRINTED CIRCUIT BOARD TH600
PL1	-	PILOT LIGHTS & 3 POSITION SWITCH
T	-	TRANSFORMER, CLASS 2
SSR	-	SOLID STATE RELAY
M	-	MANUAL RESET CUT-OUT
CM	-	BACK-UP CONTACTOR TO MANUAL
CB	-	CIRCUIT BREAKER
ST1	-	STAGE #1
ST2	-	STAGE #2
OPR	-	OFF PEAK RELAY
HCR	-	HEATING COOLING RELAY

THERMOSTAT OUTDOOR TEMPERATURE SENSOR (TH-SR)

HEAT PUMP THERMOSTAT: S1 S2 R C O AUX E Y G

FOSSIL FURNACE CONTROL TERMINAL: G R C Y W

HEAT PUMP CONTROL TERMINAL: R C O W2 Y

OUTDOOR SENSOR OR (LOAD MANAGEMENT) CONTROL

DS-600 DUCT TEMPERATURE SENSOR

FEEDER#1 FEEDER#2 G L1 L2 L1 L2

CB1 CB2

WT

DUAL ENERGY OIL/GAS

TH600-HP

TH600 TEMPERATURE SET POINTS

	#1	#2	#3	#4	#5	#6	#7
°F	110	113	118	128	134	145	155

SSR1 SSR2

24V AC GND 24V AC 24V DC COM Q4 Q3 Q2 CM

B B C W1 S2 S1 OT OT

7 6 8 10 2 1 4 13 12 11 5

hi temp. black hi temp. red hi temp. black hi temp. red black red white yellow orange grey

OP GI GT GF C O Y W1 R YS WF YT YF

OPR FR HCR ST1 ST2 OPR

C W1 S2 S1 B B CM COM

FR 24VDC

COM

SSR1 SSR2 SSR3 SSR4

E1 E2 E3 E4 CM

240V 24V FU-1

M M CM A A

#4

TITLE/TITRE

Modulating Plenum Heater – Heat Pump

THERMOLEC LTEE LTD

MONTREAL – CANADA

DRAWING NO. TH-600 HP-T18-20-4SCR MODULATING US 1st DFC

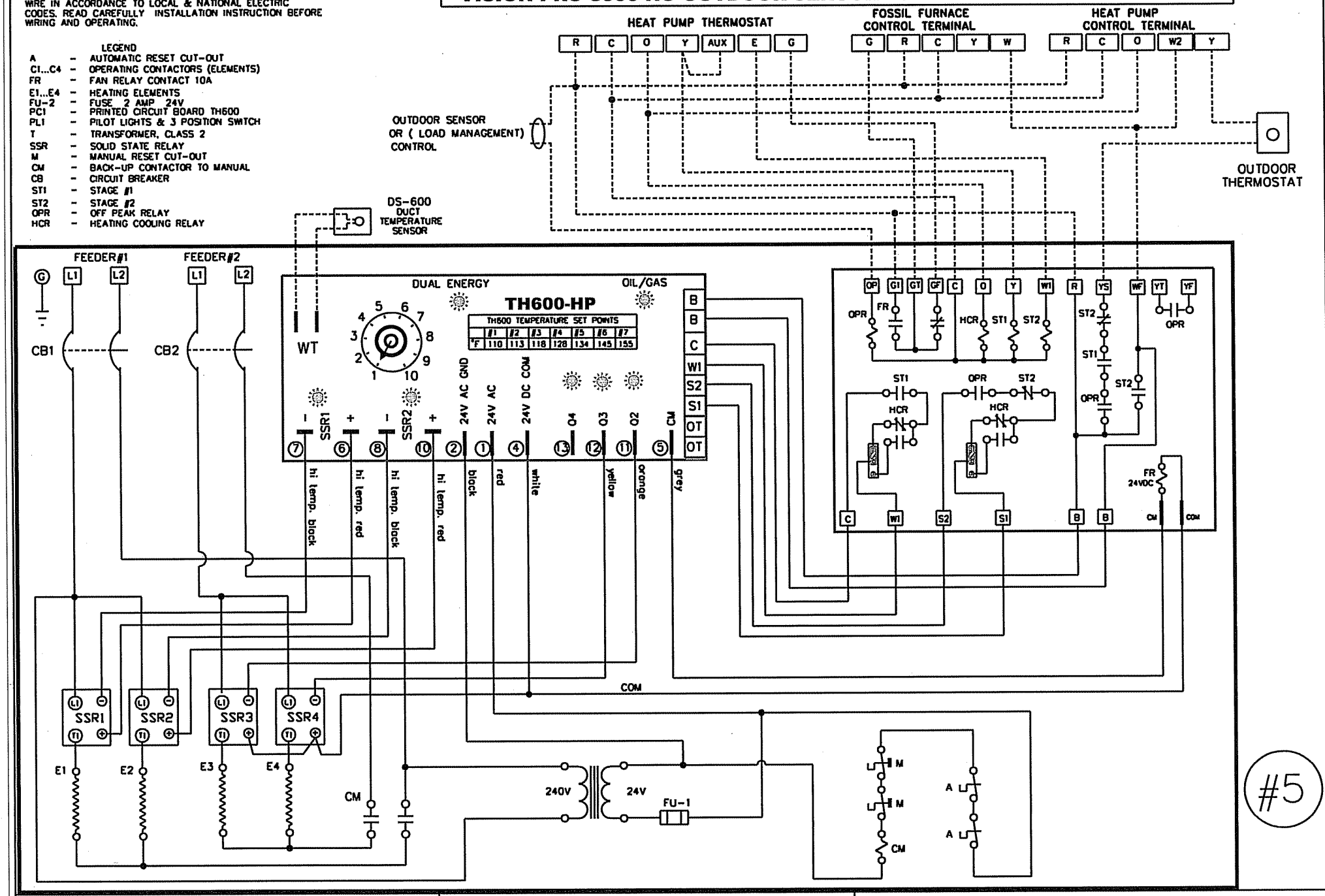
DATE	PER	
22-05-08		

VISION PRO 8000 NO OUTDOOR SENSOR - STANDARD FURNACE

IMPORTANT:
WIRE IN ACCORDANCE TO LOCAL & NATIONAL ELECTRIC CODES. READ CAREFULLY INSTALLATION INSTRUCTION BEFORE WIRING AND OPERATING.

LEGEND

A	-	AUTOMATIC RESET CUT-OUT
C1...C4	-	OPERATING CONTACTORS (ELEMENTS)
FR	-	FAN RELAY CONTACT 10A
E1...E4	-	HEATING ELEMENTS
FU-2	-	FUSE 2 AMP 24V
PC1	-	PRINTED CIRCUIT BOARD TH600
PL1	-	PILOT LIGHTS & 3 POSITION SWITCH
T	-	TRANSFORMER, CLASS 2
SSR	-	SOLID STATE RELAY
M	-	MANUAL RESET CUT-OUT
CM	-	BACK-UP CONTACTOR TO MANUAL
CB	-	CIRCUIT BREAKER
ST1	-	STAGE #1
ST2	-	STAGE #2
OPR	-	OFF PEAK RELAY
HCR	-	HEATING COOLING RELAY



TITLE/TITRE

Modulating Plenum Heater – Heat Pump

THERMOLEC LTEE LTD
MONTREAL – CANADA

DRAWING NO.TH-600HP-T18-20-4SCR MODULATING US 1st DFC STD FUR

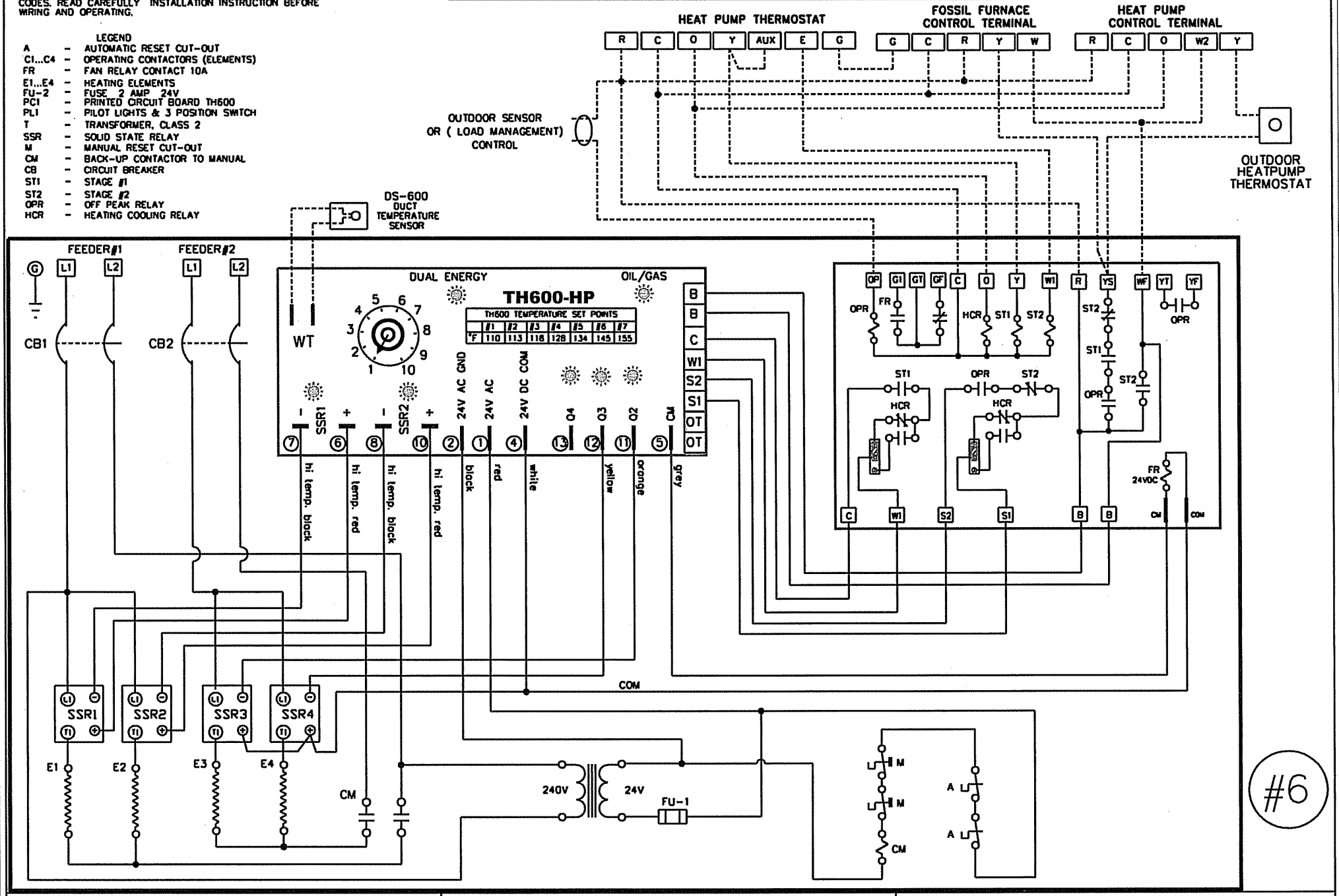
DATE	PER	
22-05-08		

VISION PRO 8000 NO OUTDOOR SENSOR - VARIABLE SPEED FURNACE

IMPORTANT:
WIRE IN ACCORDANCE TO LOCAL & NATIONAL ELECTRIC CODES. READ CAREFULLY INSTALLATION INSTRUCTION BEFORE WIRING AND OPERATING.

LEGEND

A	-	AUTOMATIC RESET CUT-OUT
C1...C4	-	OPERATING CONTACTORS (ELEMENTS)
FR	-	FAN RELAY CONTACT 10A
E1...E4	-	HEATING ELEMENTS
FU-2	-	FUSE 2 AMP 24V
PCI	-	PRINTED CIRCUIT BOARD TH600
PL1	-	PILOT LIGHTS & 3 POSITION SWITCH
T	-	TRANSFORMER, CLASS 2
SSR	-	SOLID STATE RELAY
M	-	MANUAL RESET CUT-OUT
CM	-	BACK-UP CONTACTOR TO MANUAL
CB	-	CIRCUIT BREAKER
ST1	-	STAGE #1
ST2	-	STAGE #2
OPR	-	OFF PEAK RELAY
HCR	-	HEATING COOLING RELAY



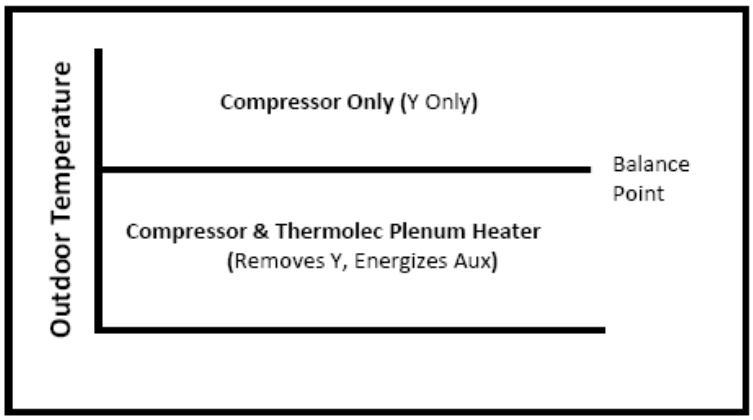
TITLE/TITRE

Modulating Plenum Heater – Heat Pump

THERMOLEC LTEE LTD
MONTREAL – CANADA

DRAWING NO. TH-600 HP-T18-20-4SCR MODULATING US 1st DFC

DATE	PER	
22-05-08		



Note: Use separate outdoor thermostat to lock out compressor (heat pump) based on outdoor temperature and heat with plenum heater only.

Sequence of Operations:

1. If outdoor temperature is above balance point programmed into the thermostat, Y1 will be energized and compressor (HP) will run.

2. If outdoor temperature is below the balance point the thermostat will de-energize Y1 and energize Auxiliary 1; allowing the compressor (HP) to run and also the plenum heater to run and supplement compressor (HP) as needed.

3. If outdoor temperature is below the balance point and also below compressor lockout temperature set at the outdoor thermostat then only the plenum heater will run.

4. If electric heat does not satisfy thermostat; Auxiliary 2 will be energized; this will shut off compressor and plenum heater, only allowing fossil fuel heat to run.

Note: For 2 stage compressors (HP); connect Y2 from thermostat to Y2 at compressor (HP) and Y2 at furnace if terminal is applicable.

EP Sales, Inc.
(952)-854-4400
www.epsalesinc.com

Represented By:
EP Sales, Inc.
7878 12th Ave. South
Bloomington, MN 55425
sales@epsalesinc.com
952-854-4400 Tech Support
952-854-4441 Fax

Honeywell Vision Pro IAQ with Outdoor Sensor:

Set-up guide and sequence of operations for Thermolec Plenum Heaters

Works with:

- 1 or 2 Stage Furnace with Variable Speed or Standard Blower
- 1 or 2 Stage Heat Pump (compressor)

For best performance of Thermolec Plenum Heater and Heat Pump System follow the settings below:

Installer Set-Up Number	Installer Set-up Name	Settings	Notes:
172	System Selection	2	Heat Pump
174	Number of Cool / Compressor Stages **(Installer Selects)**	?	1 or 2 depending on HP
176	Number of Conventional Heat or Heat Pump Aux Stages	2	Choose 2
190	Reversing Valve O/B (**Installer Selects**)	0	O/B terminal energized in cooling
		1	O/B terminal energized in heating
200	Back-Up Heat Source Applies to both Aux and EmHeat	1	Fossil Fuel Backup Heat
210	External Fossil Fuel Kit	0	Thermostat Controls Backup Heat
342	Outdoor Temp Sensor	1	Yes
345	Dual Fuel Heat Pump Control	1	Balance Point plus 2° droop
350	Heat Pump Balance Point (also compressor lockout Temperature) (**Installer Selects**)	5	5° F
		10	10° F
		15	15° F
		20	20° F
		25	25° F
		30	30° F

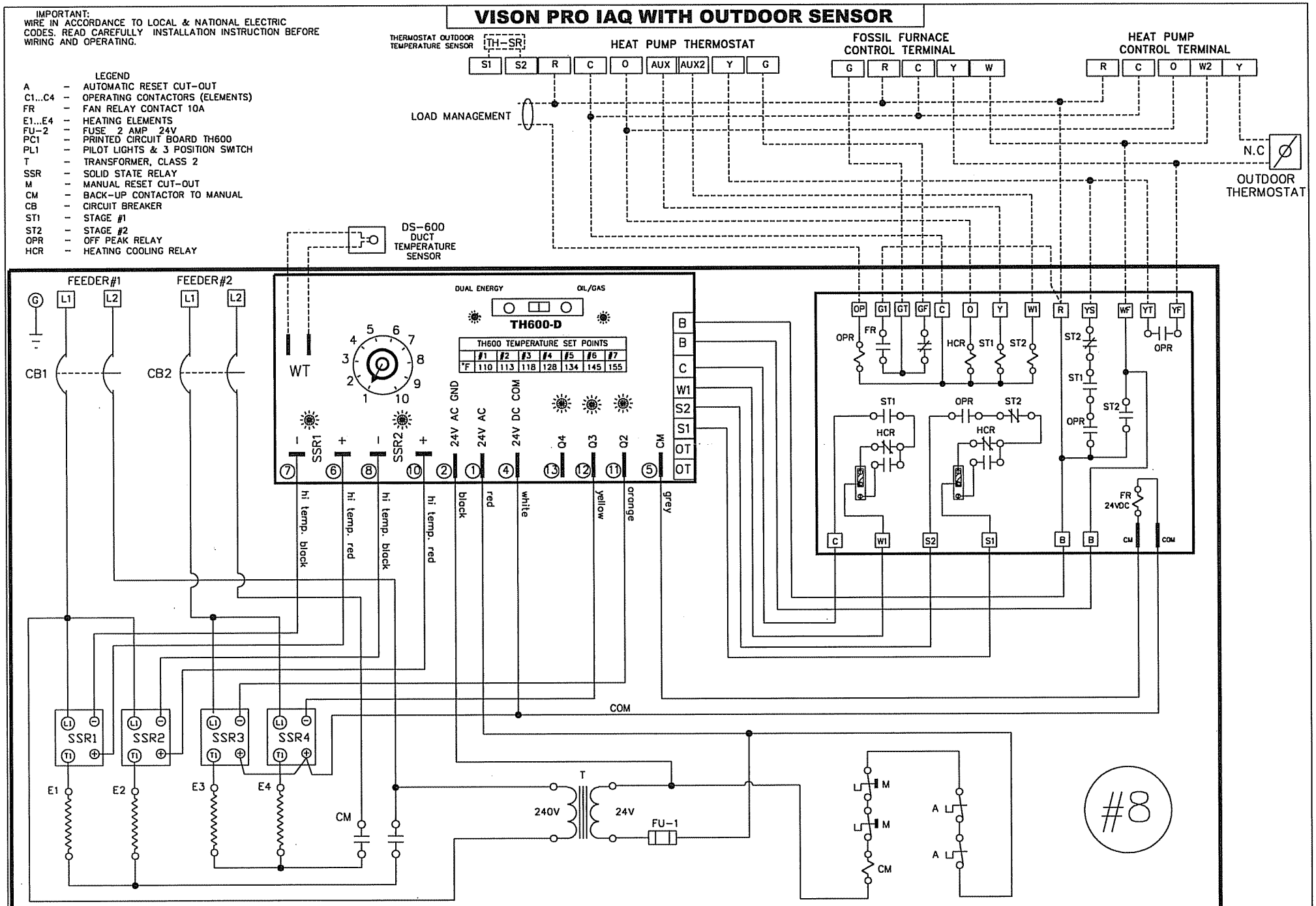
See IAQ manual for further options

VISON PRO IAQ WITH OUTDOOR SENSOR

IMPORTANT:
WIRE IN ACCORDANCE TO LOCAL & NATIONAL ELECTRIC CODES. READ CAREFULLY INSTALLATION INSTRUCTION BEFORE WIRING AND OPERATING.

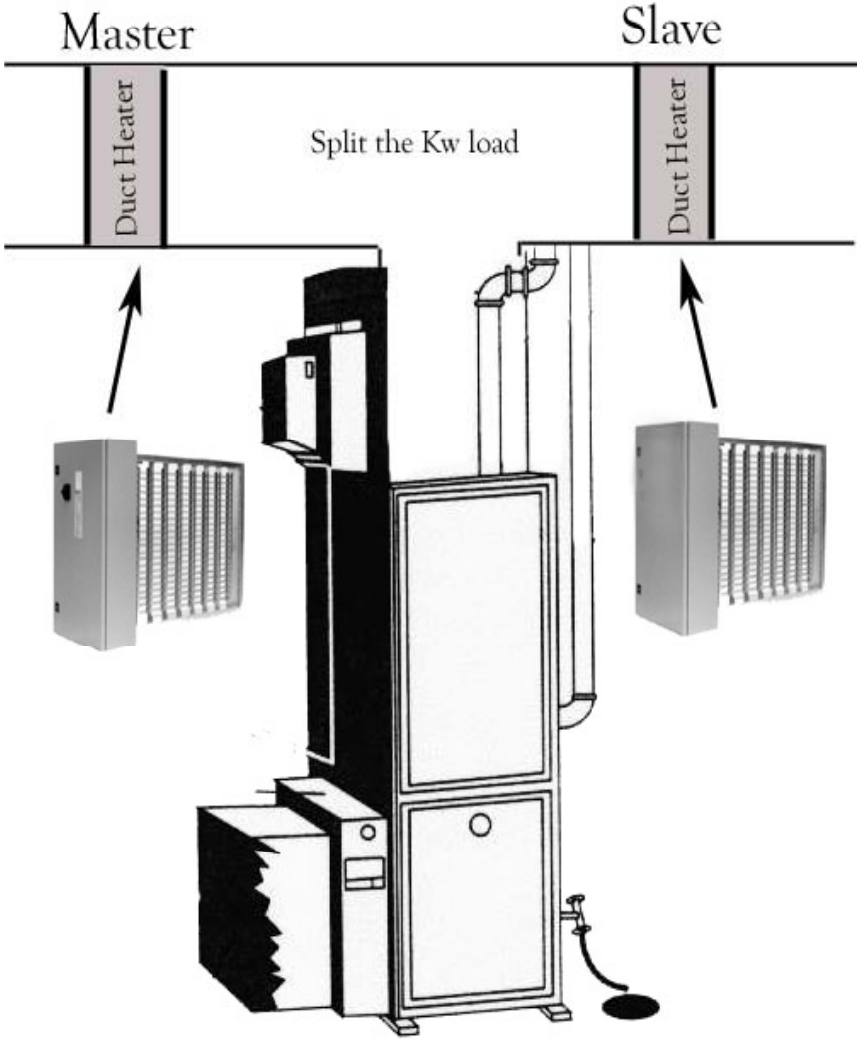
LEGEND

A	–	AUTOMATIC RESET CUT-OUT
C1...C4	–	OPERATING CONTACTORS (ELEMENTS)
FR	–	FAN RELAY CONTACT 10A
E1...E4	–	HEATING ELEMENTS
FU-2	–	FUSE 2 AMP 24V
PC1	–	PRINTED CIRCUIT BOARD TH600
PL1	–	PILOT LIGHTS & 3 POSITION SWITCH
T	–	TRANSFORMER, CLASS 2
SSR	–	SOLID STATE RELAY
M	–	MANUAL RESET CUT-OUT
CM	–	BACK-UP CONTACTOR TO MANUAL
CB	–	CIRCUIT BREAKER
ST1	–	STAGE #1
ST2	–	STAGE #2
OPR	–	OFF PEAK RELAY
HCR	–	HEATING COOLING RELAY



TITLE/TITRE Modulating Plenum Heater –HEAT PUMP	THERMOLEC LTEE LTD MONTREAL – CANADA	DRAWING NO.TH-600 AC-T18-20-4SCR MODULATING US 1st DFC VAR.
		DATE 21-05-08 / PER

Custom Plenum Heaters



Example: Master Slave Set-up

Can be used in a situation where there is not enough room in the plenum area for standard plenum heaters

Thermolec can also build custom plenum heaters to solve almost any system set-up problem you may encounter.

THERMOLEC Custom Duct Heater Quote Form

Spec Tag	Quantity	Duct Dimensions Inches W	x H	Kw	Voltage	Phase	Staged or Modulating (SCR)	Airflow	Options
Example-1	1	14	8	10	277	1	Staged	Vertical	1,3,4,8,11
Example-2	1	10"	round	15	480	3	Staged	Horizontal	3,

Standard Components Included in all heaters:
Slip in Mounting, Open Coil Elements, Auto and Manual High Limit Cutouts, Magnetic Contactors, Airflow Switch, and Transformer

Optional Equipment	
1	Built in Disconnect Switch
2	Room Thermostat (RT)
3	Duct Thermostat (DT
4	Flanged Mounting
5	Dual Fuel Control
6	Grade A Elements
7	Pilot Lights
8	Remote Adjustable Duct Sensor (RADS)
9	Remote Adjustable Room Sensor (RARS)
10	Nema 4 Control Box
11	Remote Control Box
12	Insulated Terminal Box
13	Dust Tight Control Box
14	Recess Terminal Box
15	Protective Screens (both sides)
16	Tubular Elements (Expect 3 week lead time)
17	Full Break Contactors

Name:	
Company:	
Location:	
Job Name:	

EP Sales, Inc.
(952)-854-4400
www.epsalesinc.com

$$\text{Temperature Rise, °F} = \frac{\text{KW x 3000}}{\text{CFM}}$$

$$\text{KW}^{**} = \frac{\text{CFM x Temperature Rise, °F}^{*}}{3000}$$

Quote Process Notes:

Wholesale quote requests can be faxed to 952-854-4441 or emailed to ashilt@epsalesinc.com. Quotes will be returned by EP Sales within 1 business day. Send Purchase Orders to EP Sales (please reference quote number as product description). Submittal drawings will be created and sent to wholesale customer for approval. These drawings will need to be signed off on by dealer or distributer and returned to EP Sales before an order can be processed.

EP Sales, Inc.

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Bloomington, MN 55425
Phone: (952) 854-4400
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EP Sales, Inc.

Representing the following quality manufacturers:

Thermolec: Electric heating products including boilers, plenum heaters, duct heaters, and residential humidifiers. (In Stock) www.thermolec.com

Trent Metals: Summeraire residential and light commercial air-to-air heat recovery ventilators and accessories (In Stock) www.summeraire.com

Soler & Palau: Residential and commercial air movement products. www.solerpalau-usa.com

EPS Make-up Air: Systems up to 1360 cfm with electric pre-heat. (In Stock) www.epsalesinc.com

Electromode: Residential, commercial and industrial electric heat products. www.dimplex.com/electromodeproducts.asp

Trion Inc.: Air Bear media air cleaners, electric air cleaners, and humidifiers. www.trioninc.com

National Coil Company: ARI rated A/C coils and hot water heat coils, cased and uncased, various configurations available.

FAMCO: Motorized dampers, back draft dampers, metal or plastic wall and roof vents and other products. www.famcomfg.com

Premier One: Residential and Commercial Germicidal & Ozone products, Hepa Filtration and Polarized Media Filtration. www.premieroneproducts.com

EP Sales, Inc. operates out of our office-warehouse facility in Bloomington, MN. Items marked (In Stock) are buy/sell products and they are stocked in our warehouse. Territories covered include MN, WI, ND, SD and IA. All product lines are sold through wholesale distribution.

Please visit our website www.epsalesinc.com for more information

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